Serengeti National Park

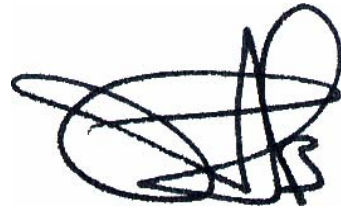## General Management Plan

2006 – 2016

Approval Page

The Board of Trustees and the Management of Tanzania National Parks have approved the implementation of this General Management Plan for Serengeti National Park.

Col. Emmanuel Balele (Retired)
Chairman, Board of Trustees
Tanzania National Parks

Date: November 2005

Gerald Bigurube
Director General
Tanzania National Parks

Date: November 2005

Foreword

The Serengeti National Park is the oldest, largest and best-known National Park in Tanzania, and over the years it has been at the forefront of international research into ecosystem dynamics and the development of conservation management approaches. It is therefore very fitting that this new General Management Plan for the Serengeti is pioneering TANAPA's revised strategic planning process.

There are significant management challenges facing the Serengeti National Park and its associated wildlife and the migration that contribute to the Park's uniqueness and global importance. These pressures are arising not just internally from escalating visitor use, but also externally from expanding human settlement and development in the wider ecosystem, which is impacting on wildlife dispersal areas as well as on the Mara River and other catchments that are the lifeblood of the Serengeti. The actions we take in the next ten years to address these pressures are certain to be critical to conserving those unique aspects of the Serengeti that we all hold dear, and to our ability to fulfil the pledge of Tanzania's First President, Mwalimu Julius Nyerere, to conserve our precious heritage for the benefit of future generations.

To succeed in this endeavour, there is a need for an effective collaboration between all the stakeholders involved in the management and use of Serengeti National Park. In this regard, we are very pleased that we have been able to forge such collaboration in the production of this GMP, through the adoption of a multidisciplinary and consultative approach involving the diverse stakeholders from within the wider ecosystem. This participation has ensured that all legitimate concerns are adequately addressed and that an optimal balance between protection and use of the Park has been established. Some may be disappointed that the GMP does not provide greater scope for tourism development in the years to come, while others will feel that the plan has been too lenient in this regard, and that more restrictions are needed to ensure that the Serengeti's globally-renowned exceptional resource values are safeguarded. This is the nature of protected area planning, and we are confident that this GMP provides the best possible foundation for achieving the management objectives that are clearly and succinctly laid out throughout the document.

Maximising plan implementation success has been a priority of this plan and close attention has been given to making the plan as accessible and relevant to SENAPA managers and their day-to-day activities as possible, as well as to other stakeholders. This has been achieved by organising the plan by Management Programmes that are directly linked to specific SENAPA departments. Each Programme has used the "logical framework approach" to clearly present the Programme objectives and management actions in relation to the management issues they address. The Management is especially pleased by the introduction of a new 3-year rolling action planning component, which helps to practically ground the 10-year GMP strategic framework. To accommodate this innovation, the GMP has been produced in a new loose-leaf binding, to enable the 3-year action plans to be rolled forward and for new planning sections to be added during the lifespan of this plan. The end result we hope is a dynamic plan that keeps pace with changing circumstances and management priorities, not a static document gathering dust on a shelf.

We are confident that the implementation of this plan will enhance the conservation and management of the Serengeti National Park within the context of the broader ecosystem, at the same time maintaining the support of all stakeholders. It is therefore with great pleasure that we entrust the implementation of this GMP to the Chief Park Warden of Serengeti National Park, his staff, and to all other concerned stakeholders.

G. Bigurube
Director General, Tanzania National Parks

Executive Summary

This 10-year (2006-2016) General Management Plan (GMP) has been produced according to the TANAPA Strategic Planning Process, with some modifications to take account of lessons learnt on previous TANAPA park planning exercises and to make the plan more relevant to the day-to-day management needs of Serengeti National Park (SENAPA) managers.

A participatory approach has been adopted to develop the GMP, which has brought together representatives from all the major Serengeti stakeholders: TANAPA (Headquarters and Park management), TAWIRI, TATO, hotel operators, scientists, district government and local communities. The process involved a series of specialist working groups and interdisciplinary planning team meetings, which enabled the diverse interest groups to work together constructively and where necessary to reach compromises, aimed at achieving a consensus that will best protect the Serengeti ecosystem in the long term. Consequently, the final product provides a strong foundation for the future management of the area that all are agreed upon.

The main structural innovation is the organisation of the GMP into four major Management Programmes, each of which is aligned with different SENAPA Departments. These Management Programmes are designed to facilitate plan implementation by building a sense of ownership and accountability for delivering specific components of the GMP in the concerned Department. Each programme consists of a long-term strategy, with management objectives, targets, actions and, where appropriate, management prescriptions for the full 10-years of the GMP. Potential environmental impacts of major Programme actions are also evaluated, with mitigating measures identified to reduce, eliminate or offset any adverse effects.

Each Management Programme also has an associated practical management-oriented 3-year Action Plan, designed to be regularly rolled forward throughout the implementation of the GMP. This will ensure that the GMP remains a dynamic plan, with the required flexibility and responsiveness to changing Park and TANAPA management needs and priorities. It will also help ensure strong linkages between the management actions prescribed by the GMP and the Annual Operations Plans developed by SENAPA management.

The other key innovation in this GMP is the application of the "**Logical Framework Approach**" (LFA). The main feature of the LFA is the **explicit and logical linkages** established between the GMP's 10-year management objectives, targets, the 3-year Action Plans and, ultimately, the management tasks in the Park's Annual Operations Plans. The application of the LFA has helped develop a GMP that can be effectively and efficiently implemented, as well as more easily monitored and evaluated.

To complement these innovations, the Serengeti GMP has been produced in a loose-leaf format to ensure that the plan remains a dynamic document able to incorporate future additions, such as the Technical Detail Plans, and amendments and updates to the 3-year rolling Action Plans as required. This adaptability will help keep the GMP up-to-date and better able to guide park management activities throughout its 10-year lifespan.

Park Purpose and Exceptional Resource Values

The purpose of SENAPA as defined through a workshop process is:

To conserve and protect the Serengeti ecosystem, its habitats, biodiversity, migrations of large mammals and birds, and its endemic and threatened species

This purpose statement is derived from the Park's Exceptional Resource Values (ERVs), which have been divided into four categories: Natural, Scenic, Social and Cultural. The most important of SENAPA's ERVs as identified by stakeholders include: the large mammal migra-

tion, which provides the principal justification for the Serengeti's World Heritage and Bio-sphere Reserve status; high flora and fauna biodiversity within pristine wilderness areas; vast open savannah plains with large predator-prey populations that attract tourists and revenue to Tanzania and neighbouring communities; a large water catchment area, which is vital to the people living outside the Park as well as the Serengeti's biodiversity, and traditional cultural sites important for hunter-gatherers and pastoralists.

Zoning Scheme

The zoning of SENAPA aims to provide a framework for achieving and reconciling the twin management needs of protecting the natural qualities and environment of the Park and regulating and promoting visitor use. The previous SENAPA zoning scheme contained eight zones, which proved difficult to understand and implement. In response, the new zoning scheme has been simplified to the following three management zones: High Use Zone, Low Use Zone and Wilderness Zone.

The **High Use Zone** covers 23 per cent of SENAPA and is centred on the Seronera Valley, with segments radiating out to include the areas with the highest level of tourism infrastructure, facilities and services. Game viewing by vehicle along designated roads will constitute the principal visitor activity. However, short guided trail walks and designated "tourism sinks" will provide opportunities for visitors to get out of their vehicles to enjoy the scenery and wildlife. The GMP stipulates that any increase in bed capacity will be matched by an equivalent expansion in services and roads.

The **Low Use Zone** covers 42 per cent of SENAPA and is contained in five blocks distributed evenly throughout the Park. This zone accommodates a lower number and density of visitors than the High Use Zone, with the more limited road network and lower bed capacity providing increased opportunities for exclusivity and solitude. The GMP stipulates that only permanent and non-permanent tented camps will be permitted in this zone, with visitor activities focused on game viewing by vehicles. Up to 188 additional beds are proposed in this zone; including up to four new permanent tented camps around Wogakuria and south of the Grumeti River at Musabi and 13 new Special Campsites in more remote areas of this zone. This is the only zone where off-road driving may be permitted in designated areas, which will be identified annually by SENAPA management.

The **Wilderness Zone** covers 35 per cent of SENAPA and incorporates the hilly areas of the Park, where the very limited road network and lack of any facilities already restricts access. The only visitor activity permitted is walking safaris, with game viewing by vehicles prohibited. This zone contains no permanent structures; apart from a limited number of access roads to wilderness campsites on the zone edges; for use by SENAPA management and the support teams of walking safari operators.

Management Programmes

The GMP's four Management Programmes with their associated responsible Departments indicated in parenthesis are:

1. **Ecosystem Management Programme** (Ecology and Protection Departments)
2. **Tourism Management Programme** (Tourism Department)
3. **Community Outreach Programme** (Outreach Department)
4. **Park Operations Programme** (Protection, Administration and Stores/Works Departments)

The key features of these Programmes are described below:

1. *Ecosystem Management Programme*

The GMP's Ecosystem Management Programme is based on a simplified ecological management and monitoring approach that has been adapted from the latest international conservation planning methodologies and best practice. The Programme identifies eight SENAPA **Conservation Targets** - the ecological components that capture the unique biodiversity of the Park. The GMP maintains that if these eight Conservation Targets are safeguarded, then the long-term health of the Park's ecosystem will be secure. The Conservation Targets selected for SENAPA are:

Conservation Targets	Ecosystem Level
1. The Migration 2. Mara River	System
3. Riverine Forest 4. *Acacia* woodland 5. *Terminalia* woodland 6. Kopje habitat	Community
7. Black rhino 8. Wild dogs	Species

The Ecosystem Management Programme aims to ensure that all components and processes of the naturally evolving Serengeti ecosystem are conserved through the implementation of strategies designed to reduce specific threats to the prioritised Conservation Targets and to restore the species-level Conservation Targets (i.e. Black rhinos and Wild dogs). Management actions to reduce threats to the Migration and the Mara River system will concentrate on using sound ecological understanding to inform, influence and collaborate with key stakeholders involved in management and decision-making within the Greater Serengeti ecosystem. Fire plays a critical role in shaping the Serengeti and a Fire Management Plan will be developed and implemented during this GMP to control and minimise the damage caused by **wildfire** and direct the use of **prescribed fires** for management purposes. The restoration of Black rhino and Wild dogs in the Serengeti will be based on careful scientific research, and any potential re-introductions will be done in close consultation with TANAPA headquarters and TAWIRI.

The Programme also provides a **framework** for the development of a simple and cost-effective Ecological Monitoring Plan for SENAPA, based on the Park's Conservation Targets and their key ecological attributes. The Ecological Monitoring Plan will be formulated subsequently as a Technical Detail Plan, and will enable an assessment of the Ecosystem Management Programme's management interventions as well as facilitating adaptive management.

2. *Tourism Management Programme*

The Tourism Management Programme aims to provide an outstanding experience for both local and international visitors, optimal economic benefits to the nation, TANAPA, private sector partners and local communities, and minimal impacts on the Park's resource values. A high priority for this GMP will be the enhancement of visitor access and use while at the same time minimising disturbance to key habitats and wildlife. One of the main ways of achieving these dual aims will be the **diversification and dispersal** of tourism activities, especially in those areas of the park which are presently little used. In addition, efforts to mitigate visitor impacts will be enhanced through the dissemination of the **Serengeti Code of Conduct**, which encapsulates the park rules and regulations through a few general behavioural characteristics expected of visitors and their tour guides and drivers.

Diversification of tourism will be achieved, in part, through the development of **tourism sinks** in the High and Low Use Zones. These sinks will be designated areas where visitors can get out of their vehicles to undertake a specific activity; such as a short guided walk on a designated trail, viewing a cultural site, or lunch at a picnic site or water-bird viewing point. **Overnight walking safaris** will be piloted in the Wilderness Zone, and a walking safari scheme will be elaborated by TANAPA, TATO and the SENAPA Resource Protection Department during the first year of GMP implementation.

Another key strategy to achieving a world class and environmentally responsible tourism experience in the Serengeti will be to **upgrade and expand the existing SENAPA visitor facilities**. These improvements will be done in close consultation with the tourism industry, with priorities being to upgrade water supply and sanitation throughout the Park and to provide accommodation appropriate to the needs and budget of local visitors, an important step in encouraging more Tanzanians to visit the Serengeti.

The final focus of the Programme will be to update of SENAPA information services and administration support systems to ensure an informative and safe visit is enjoyed by all. An expanded and enhanced network of visitor **interpretation facilities** will be developed, including new visitor centres in strategic locations of the Park, mini-interpretation sites at selected tourism sinks, and up-to-date high quality SENAPA interpretation materials for sale and distribution. In accordance with TANAPA system-wide practices, administrative systems will be fully computerised on a wide area network with e-payment facilities at Park entrances. In addition, a new **Special Campsite booking system** will be piloted; aimed at ensuring high environmental standards are maintained and preventing unscrupulous tour operators block booking sites for occasional use. The new system will limit bookings at a specific campsite to a maximum of four consecutive weeks. In addition, a new category of Premium Campsites will be piloted during the GMP, which will consist of a few carefully selected sites in the High and Low Use Zones that may be booked for a season.

3. Community Outreach Programme

The Community Outreach Programme aims to elicit the support and collaboration of the communities surrounding SENAPA in safeguarding the integrity of SENAPA's resource values. Proposed activities to achieve this will include scaling-up the conservation education programme to all park-adjacent districts, and improving park-community communication and cooperation.

The major focus of this Programme will be to re-invigorate the **Support to Community Initiated Projects** (SCIP) scheme. This will involve revising the SCIP planning process to ensure that all current and future SCIP projects address both community development needs (especially of marginalised groups) and ecosystem conservation priorities. Two key areas for future support are prioritised: firstly, the identification and establishment of conservation-friendly income generating activities and secondly, the mitigation of human-wildlife conflicts. Linked to this will be the provision of support for community-based national resource management in the SENAPA buffer areas.

4. Park Operations Programme

The Park Operations Programme aims to enhance the efficiency and effectiveness of SENAPA park operations, such that SENAPA becomes a role model nationally and internationally. The GMP problem analysis identified poaching as the priority management issue to be addressed by this Programme. In response, SENAPA management will investigate and pilot new **anti-poaching** techniques; re-equip the Protection Department with the necessary modern equipment; build ranger-local community cooperation and anti-poaching reward schemes; and provide training to Village Game Scouts to protect conservation areas in the SENAPA buffer areas.

Another priority for this Programme is to achieve best practice in park administration and management systems. The first action to achieve this will be to build the capacity and motivation of SENAPA staff - through relevant training, the provision of better medical services, and improved education opportunities for staff and their dependents. Other management actions include completing the integration of administration functions between Fort Ikoma and Seronera, the installation of computerised financial accounting, and the development of innovative systems for transparently collecting and monitoring revenue.

3-Year Action Plans

This section provides the initial 3-year Action Plans for each of the four management programmes. These plans provide a clear and consolidated summary of the management actions to be carried out under this GMP, the timeframe on which they will occur, the input requirements, and responsibility for implementation. Where appropriate, each action described under the management programme has been broken down into a series of **3-year activities** to facilitate the action's implementation and to aid their incorporation into the Park's Annual Operations Plans.

Monitoring Plan

A GMP monitoring framework makes up the final section of this document. The framework is designed to provide guidance for the regular assessment of the impacts, positive and negative, resulting from the implementation of the major management targets and actions laid out in this GMP, and a basis for subsequent adaptive management. The framework includes easily assessable indicators for measuring these impacts. Monitoring of GMP impacts is a key aspect of the ultimate success of the plan, in ensuring that the overall benefits from the implementation of this GMP are maximised, and that any negative impacts are appropriately mitigated.

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Acronyms

ADM	Administrative Manager - SENAPA
AI	Accountant In-charge - SENAPA
AOP	Annual Operations Plan
AWF	African Wildlife Foundation
BI	Building Inspector - SENAPA
CBNRM	Community-based natural resources management
CC	Community conservation
CCE	Chief Civil Engineer - TANAPA HQ
CCS	Community Conservation Service
CDC	Conservation Development Centre
CPW	Chief Park Warden
DALP	Development-Action-Lease Procedures (TANAPA)
EIA	Environmental Impact Assessment
ERV	Exceptional Resource Value
FZS	Frankfurt Zoological Society
GMP	General Management Plan
GPS	Global Positioning System
IUCN	International Union for Conservation of Nature & Natural Resources
KWS	Kenya Wildlife Service
LAU	Limits of Acceptable Use
LFA	Logical framework approach
ME	Mechanical Engineer - SENAPA
MEM	Manager, Ecological Monitoring - TANAPA HQ
MNRT	Ministry of Natural Resources & Tourism
NCA	Ngorongoro Conservation Area
NCAA	Ngorongoro Conservation Area Authority
OPM	Outreach Programme Manager - TANAPA HQ
PE	Park Ecologist - SENAPA
PEA	Pragmatic Environmental Assessment
RBI	Resource Base Inventory
RI	Road Inspector - SENAPA
SCIP	Support to Community Initiated Projects
SENAPA	Serengeti National Park
SRA	Seronera (Serengeti National Park)
STEEP	Serengeti Tourism, Education and Extension Project
SWRI	Serengeti Wildlife Research Institute
TANAPA	Tanzania National Parks
TATO	Tanzania Association of Tour Operators
TAWIRI	Tanzania Wildlife Research Institute
Tshs	Tanzania Shillings
VO	Veterinary Officer - SENAPA
WD	Wildlife Division
WMA	Wildlife Management Area
WO	Warden Outreach - SENAPA
WP	Warden Protection - SENAPA
ZPW	Zonal Park Warden - SENAPA

PLAN
INTRODUCTION

Context

This General Management Plan (GMP) is the third management plan to be written for the Serengeti National Park (SENAPA), and covers the 10-year period from 2006 to 2016.

The earliest SENAPA management plan (1991-1995), provided for the first time in a single document, details of the policies guiding SENAPA's management and management objectives for the Park as a whole as well as for individual SENAPA departments. Task priorities and schedules were laid out for establishing a comprehensive park-wide zoning scheme as well as for addressing the management issues facing each department. The main weaknesses encountered in the implementation of the plan were firstly, that the departmental objectives and activities were not clearly formulated, structured, nor linked to the overall Park objectives and secondly, that practical considerations, such as financial constraints, were not accounted for.

The second SENAPA management plan was the Management Zone Plan (1996-2000), which provided a comprehensive coverage of the management issues, with management objectives grouped by theme, and management actions and prescriptions established for each zone. However, there was a lack of higher-level objectives to provide an overall framework, with the result that some of the stated management objectives were unachievable or beyond the scope of SENAPA management, whilst others were present at inappropriate levels or missing completely.

The lessons learnt from implementing these previous plans have provided a few key lessons for developing this current plan. The principal lesson being the importance of using a Logical Framework Approach for developing an effective and actionable plan; with clearly defined and distinct objectives at various levels, and with explicit linkages between them. Another key lesson is that zoning should be a management tool, not a planning tool *per se*, and that therefore this GMP should not be primarily organised according to zones.

Function and structure

This GMP is intended to guide and facilitate the management of park resources, the uses permitted within the area, and the infrastructure development needed to support that management and use. An important underpinning of the GMP is the establishment of **long-term strategies** and **management objectives and targets** for addressing SENAPA's management problems and issues and for achieving a desired future state over the 10-year duration of the plan. These objectives in turn provide the framework for determining what **management actions** need to be implemented, when to take them, and the human and other resource requirements needed to implement them. These management actions and the specific activities needed to accomplish them will be re-developed every three years according to the changing Park management needs.

The SENAPA GMP follows the generic GMP structure established by TANAPA, as described in the TANAPA Strategic Planning Process Manual (1995a). However, the SENAPA Core Planning Team has made several adjustments to the planning process and plan structure to take into account lessons learnt on previous TANAPA park planning exercises, and the special needs of SENAPA. In particular, emphasis has been placed on making the plan more relevant to the day-to-day management needs of SENAPA park managers. The plan structure, as illustrated in Figure A.1 below, defines the main sections of the plan. Below are described some key aspects of the plan structure adopted for the Serengeti GMP.

Figure A.1: GMP structure

Section A Plan Introduction	Section B Park Purpose and Values	Section C - F Management Programmes	Section G 3-Year Action Plan	Section H Plan Monitoring	Section I Annexes
Context	Exceptional Resource Values	Management Strategy & Objectives	Activities	Negative and positive impact indicators	Ecological Monitoring Plan
Function and Structure	Park Purpose Statement	Targets and Issues	Responsibilities		Fire Management Plan
Participation and Process	SENAPA Zoning Scheme	Management Actions and EIA considerations	Timeframe		Rhino Management Plan
			Input requirements		Other Technical Detail Plans

4 Programmes

- Ecosystem Mgmt
- Tourism Mgmt
- Community Outreach
- Park Operations

Alignment of GMP with SENAPA departments

The structure of the GMP puts emphasis on planning by **Management Programme**, rather than by management zone as in past plans (see TANAPA, 1991 and 1996). These programmes provide the long-term management strategies, objectives, targets, actions and, where appropriate, prescriptions for achieving the Park Purpose and maintaining the Park's Exceptional Resource Values. The four Management Programmes or strategies for SENAPA are:

- ▶ Ecosystem Management
- ▶ Tourism Management
- ▶ Community Outreach
- ▶ Park Operations

Structuring the GMP into these four discrete programmes will facilitate understanding and subsequent implementation. This is achieved due to the programmes being aligned with different departments in SENAPA, such as the Ecology and Tourism Departments. This alignment ensures that the plan can be implemented relatively easily compared to a GMP that is, for example, entirely organised by park zones. Allocating responsibility for implementing individual Management Programmes to specific SENAPA Departments also helps to build a sense of ownership and accountability for GMP success in the concerned department. Finally, Management Programmes also complement the Logical Framework Approach to park planning (see below).

10-year strategic and 3-year action plan structure

General management plans typically have a 10-year planning horizon, with both management objectives and actions established on a 10-year timeframe. This GMP takes a different approach, incorporating both 10-year strategic <u>and</u> 3-year action planning timeframes. This

structure ensures that the GMP retains a long-term strategic vision while at the same time providing the required flexibility and responsiveness to changing Park and TANAPA corporate management needs and priorities, such that the GMP remains relevant to the day-to-day management issues and needs of SENAPA management staff. Specifically, the approach aims to ensure that there is a strong link between the actions prescribed by the GMP and the Annual Operations Plans (AOPs) developed by park management, which are directly linked to the corporate annual budgeting cycle of TANAPA Headquarters. Figure A.2 below illustrates the linkages between the three main park-level planning mechanisms.

Figure A.2: 10-year strategic and 3-year action plan components of the GMP, and the link to annual operating planning
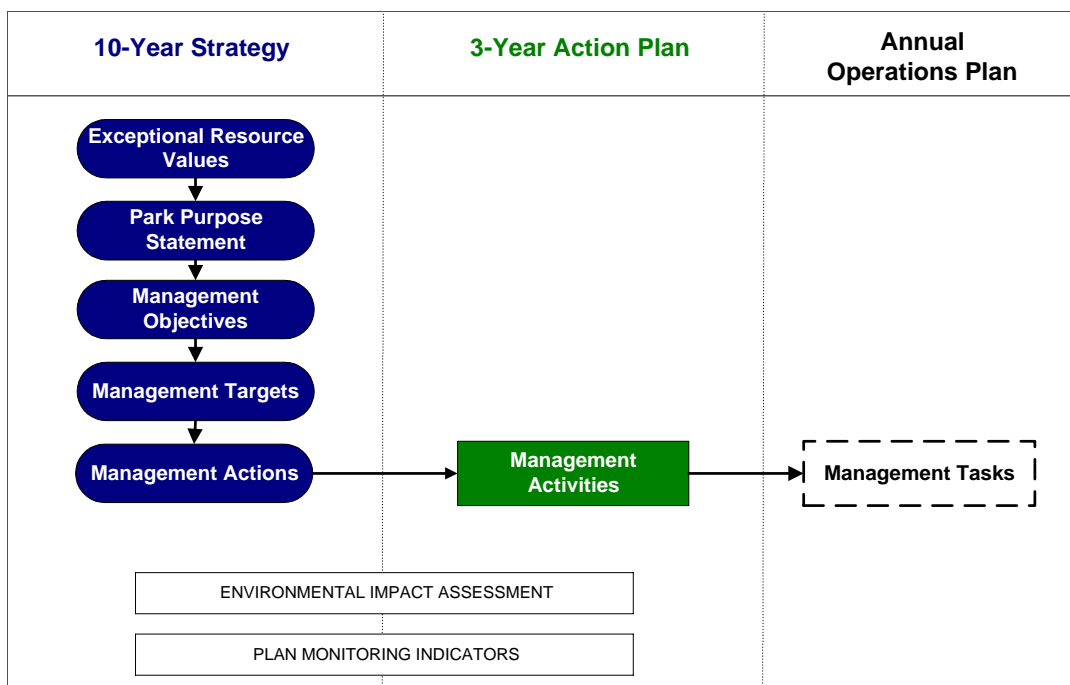
Logical Framework Approach

Another key innovation in this GMP is the application of the "**Logical Framework Approach**" (LFA). The LFA is now the methodology of choice in development project planning, and provides an efficient, accountable and logical rationale for planning that will result in a GMP that can be more effectively and efficiently implemented, as well as more easily monitored and evaluated. The main feature of the LFA is the **explicit and logical linkages** established between the GMP's 10-year management objectives and the activities in the 3-year Action Plan, and ultimately the management tasks in the Annual Operations Plan (see Figure A.2 above).

Participation

The TANAPA strategic planning process aims to ensure that the national park's stakeholders are given an appropriate opportunity to contribute to the design of the GMP, as required by The Wildlife Policy of Tanzania. In this way, the stakeholders are encouraged to buy into the planning process, to ensure that the plan is both realistic and appropriate and that they are committed to its implementation.

At an early stage, the SENAPA Core Planning Team carried out a Stakeholders Analysis as a basis for developing a simple participation and communications strategy for the planning process (see Table A.1 below).

Table A.1: SENAPA GMP Planning Process Communications Strategy

Involve	Consult	Raise Awareness	No Action
▶ District Government ▶ Hotel Operators (Representation) ▶ Local communities (representation) ▶ Protected Area Agencies ▶ SENAPA Management ▶ TANAPA Board of Trustees ▶ TANAPA HQ ▶ TAWIRI ▶ Tour operators (representation) ▶ Wildlife Division	▶ District Councils ▶ Donors (Selected) ▶ East African Community (via MNRT) ▶ Hotel Operators ▶ Hunting Concessions ▶ Kenya Wildlife Service ▶ Local Communities ▶ Lusaka Task Force ▶ Mara Hydro Project ▶ Mara National Reserve Kenya ▶ Ministry of Natural Resources & Tourism ▶ NGOs ▶ Politicians ▶ Research Communities ▶ SENAPA Staff ▶ Tanzania Investment Centre ▶ Tanzania Tourist Board ▶ Tour Operators ▶ Tourists ▶ Training Institutions	▶ Donors (on completion of plan) ▶ Film makers ▶ General Public ▶ International Communities ▶ Tourists (through questionnaires)	▶ Business enterprise ▶ Employees ▶ Individual benefactors ▶ International organisations ▶ Miners ▶ Suppliers ▶ TZ Government ▶ TZ Treasury

Stakeholders were assigned to categories according to their anticipated degree of participation in the planning process:

▶ **Involve** – key stakeholders forming the Serengeti Planning Team (see Figure A.3 below), who were invited to participate in and contribute to the main GMP planning workshops and, as appropriate, the management programme working groups.

▶ **Consult** – important stakeholders who were actively consulted during the planning process, and whose inputs were directly incorporated. Consultation was carried out through one-on-one interviews.

▶ **Raise Awareness** – stakeholders who were be kept informed about progress in the planning process and given an opportunity to provide feedback, but who were not directly involved or consulted.

▶ **No Action** – stakeholders for whom there was no immediate benefit in targeting for involvement in the planning process.

The planning process consequently adopted for the Serengeti GMP involved a multi-layered approach to participation, the objective being to provide an opportunity for as many stake-

holders as possible to contribute to the planning process in realistic and appropriate ways. Figure A.3 illustrates the interactions between the various stakeholders making up the GMP Planning Team (See Annex 4: for a full list of members).

Figure A.3: Serengeti GMP Planning Team
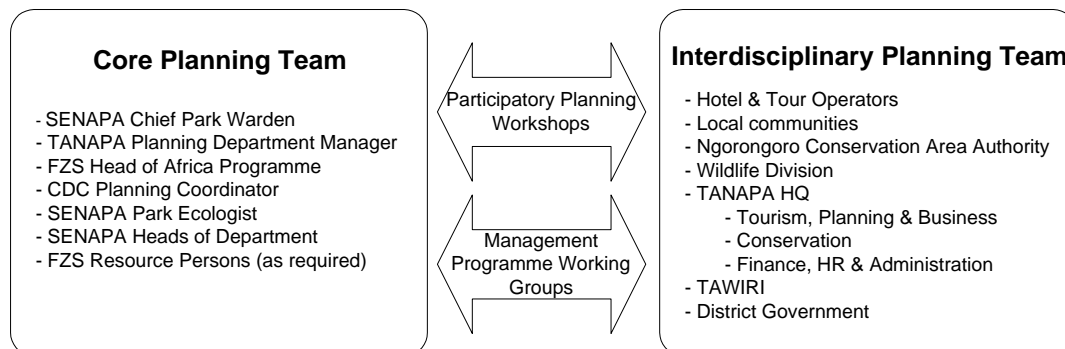
Process

As detailed above, this GMP has been developed through a participatory process to ensure that it has wide support from among the Park's varied stakeholders and is both realistic and implementable. The timeframe, main activities and outputs of the planning process are illustrated in Annex 2:.

The planning process began with a meeting of the SENAPA Core Planning Team, which was followed by an intensive period of information collection and stakeholder consultations leading to the production of a **Resource Base Inventory** (RBI) report. The RBI presents an up-to-date synthesis of key background information and the state of knowledge on SENAPA that is useful in the development of the GMP, and covers the following main topics:

▶ New collations of *fauna and flora inventories*
▶ Available GIS data including *over 30 themed maps* that present information on topography, wildlife distribution, river networks, fire events, park infrastructure and park-adjacent developments and activities
▶ Outputs from *stakeholder consultations*
▶ An analysis of SENAPA *management issues*
▶ Details of important international *IUCN protected area guidelines*
▶ Information on *research published* on the Serengeti

Using the findings of the RBI, the **GMP Stakeholders Planning Workshop** was held in January 2004, which involved the full GMP Planning Team in developing the long-term strategic framework for managing SENAPA. This included a review of the Park's purpose and resource values and the identification and prioritisation of the main management issues and opportunities that impact on the Park's values and the achievement of the Park's purpose. The GMP Planning Team developed provisional 10-year Management Objectives and Targets for the SENAPA Management Programmes, which provided the framework for further plan development.

The specific details of the Management Programmes were subsequently developed by specialist **Working Groups** made up of the appropriate SENAPA and TANAPA HQ managers, selected resource people and relevant stakeholders, plus a facilitator. Each group elaborated the overall strategy, or general statement of policy, guidelines and prescriptions where nec-

essary, and the 3-year Action Plans for the relevant Management Programme. The outputs of the four Working Groups were presented back for review by the full GMP Planning Team at the **GMP Stakeholders Presentation Workshop** in March 2005.

The final stage in the process was for the SENAPA Departments to conduct a "reality check" on the Management Programme Actions Plans, and to allocate responsibilities, set time-frames and specify input requirements for implementation.

PARK VALUES
AND PURPOSE

SENAPA Exceptional Resource Values

Exceptional Resource Values (ERVs) are the biophysical features of a national park that are assessed as being especially important to maintaining the unique ecological character and functions of the park and that provide outstanding benefits (social, economic and aesthetic) to local, national and international stakeholders. The identification of SENAPA's ERVs provides a foundation for formulating the Park's Purpose Statement, identifying the Park's management problems and opportunities, and generating management objectives and targets.

Table B.1 below shows the top twenty ERVs prioritised by the GMP Planning Team. The ERVs are grouped according to four main categories: *natural, scenic, social* and *cultural*. Each of these ERVs is described below.

Table B.1: SENAPA Exceptional Resource Values by category

Category	Exceptional Resource Value	Rank
Natural	Large mammal migration cycle, notably ungulates	1
	Rich flora and fauna biodiversity	2
	Natural self-regulating ecosystem, linked to the Mara Reserve	4
	Habitat mosaic; grasslands, bushland, woodlands, forests	8
	Protection of threatened and endangered species	10
	Migratory birds and their habitats	14
	Seasonality; wet and dry periods, allowing for the migration	15
	The availability of permanent surface water	17
Scenic	Endless grassland savannah plains	3
	Large predator - prey population and interactions	5
	Wilderness; pristine condition of large areas	11
	Kopjes (granite inselbergs and habitats)	13
	Mara and Grumeti riverine systems	19
Social	Direct economic benefits from tourism to communities	7
	National economic benefits, particularly from tourism	9
	Huge water catchment area for people outside the Park	12
	Community social services from community outreach	16
Cultural	National and World Heritage status	6
	Traditional cultural sites of hunter-gatherers and pastoralists	18
	Stone Age heritage; early records of mankind	20

Natural values

The Migration

The Migration is the defining characteristic of the Serengeti-Mara ecosystem, and much of the migration occurs within the Serengeti National Park. The 1.3 million wildebeest together with 0.6 million zebra and Thomson's gazelle congregate on the southern grasslands of the Park and NCA during the wet season (December-May). In May or June they move northwest and concentrate in the northern woodlands of the Park and then move to the Masai Mara National Reserve in Kenya during the dry season (August – November). The wildebeest return to the southern grasslands with the onset of the rain in December. The migration track of the wildebeest is shown in Figure B.1 below.

Figure B.1: The wildebeest migration as tracked by GPS collared individuals
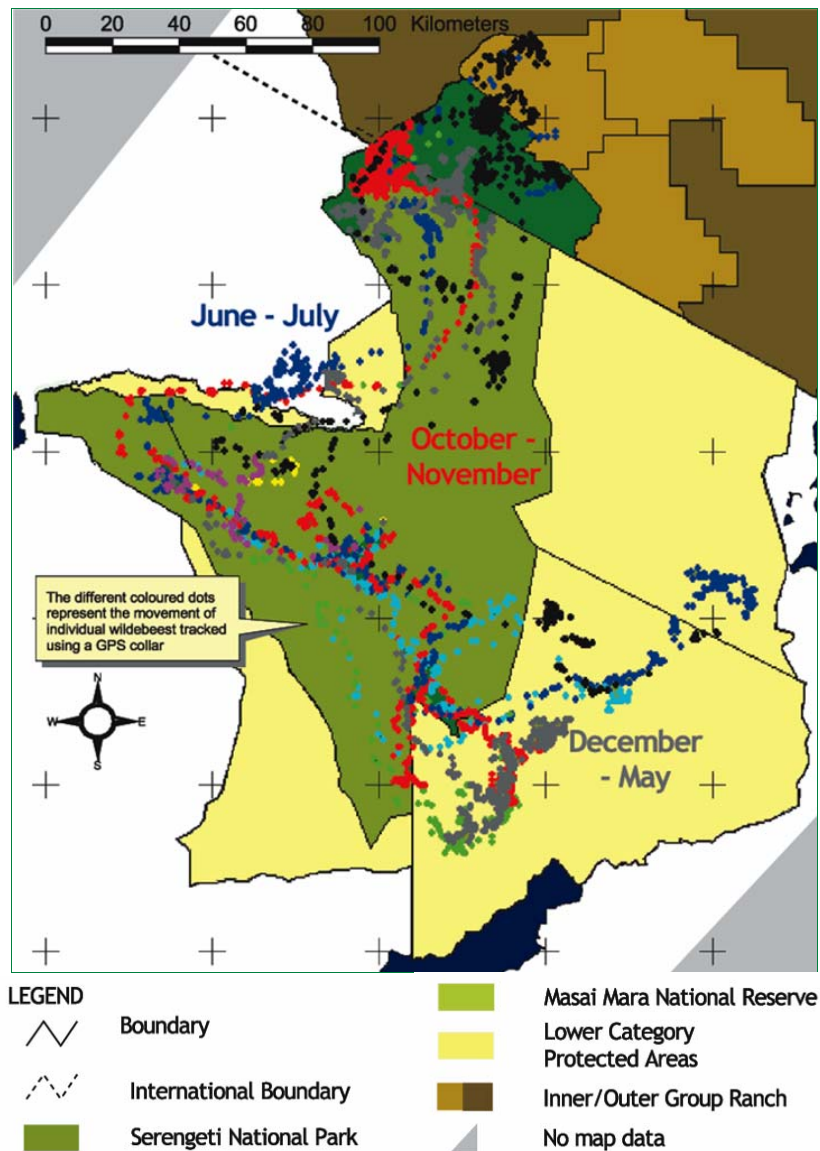
Source: Adapted from Thirgood *et al.* (in press)

Although the underlying causes of the migration are not fully understood, the main factor influencing the northern migration is thought to be rainfall through its effect on food or salinity. Explanations for the southern migration centre on energy maximization and micronutrient availability. The variation in migration track may be attributable to inter-annual fluctuations in rainfall and wildebeest numbers.

Flora and fauna biodiversity

The flora diversity of the Serengeti can be broadly divided into three major zones - the southern grassland plains, the northern woodlands and the western area consisting of a matrix of grasslands and woodlands. The shallow-soiled southern plains are treeless except for the Park-adjacent Olduvai Gorge, and the plains' grasses are alkaline-tolerant with many

small dicotyledonous plants. With the deeper soils to the west and north, grass species change, the dominant species being *Themeda triandra* and *Pennisetum mezianum*. The woodlands are dominated by *Acacia* species in all areas except for a small region south and west of Kogatende, where *Terminalia-Combretum* takes over.

The Serengeti is well known not only for supporting the largest herds of migratory ungulates but also one of the highest concentrations of predators in the world. In 1995, the predator population was estimated to include about 7,500 hyenas, and 2,800 lions, with the highest concentrations being in the Seronera valley where the perennial availability of water attracts a wide range of antelope and other animals. There are over 500 species of birds that are perennially or seasonally present in the Park, of which five species are endemic to Tanzania. The Park has the highest Ostrich population in Tanzania and probably Africa, making the population globally important.

Although the majority of systematic studies have concentrated on birds and the larger mammal species, other studies have shown high biodiversity in other taxa. For example, twenty-five species of toads and frogs have been recently recorded by Channing & Moyer (in press) and over 100 species of dung beetles have been identified in the plains near Lake Lagarja (Foster and Bresele in Sinclair and Arcese, 1995).

Self-regulating ecosystem

A growing understanding of the Serengeti ecosystem has highlighted that the ecosystem can exist in multiple states of woodland or grassland, both spatially and temporally, and that long-term natural change between different states within the ecosystem is a natural phenomenon. Figure B.2 below illustrates the grassland-woodland dynamic and the main factors that cause the transitions between stable states.

Figure B.2: Two alternative stable states of a savannah grassland
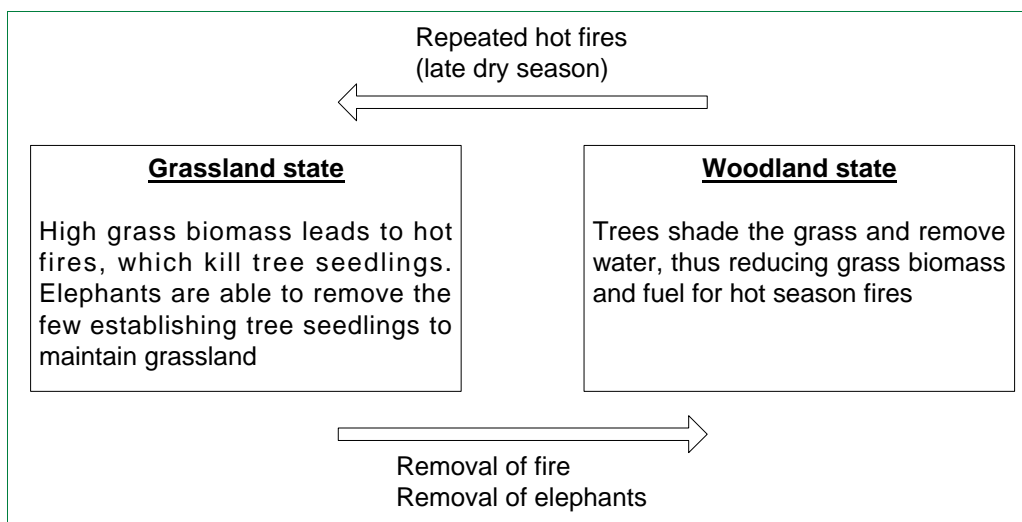
Source: Bayona & Sharam (2001)

Fire incidences, themselves modulated by rainfall patterns, are the main factor influencing vegetation states, however, keystone species – e.g. wildebeest and elephants – can play an important factor in maintaining and influencing these states through their grazing/ browsing patterns. Conversely the ecosystem is self-regulating regarding wildlife numbers, through either food availability (e.g. as for wildebeest) or predation (e.g. as with Thomson's gazelle).

Habitat mosaic

An overriding characteristic of the Serengeti is the heterogeneity of its vegetation communities. This diversity is most easily seen in the seven major habitat types, as characterised in Table B.2 below. In turn these habitats have a diversity of plant community assemblages that change according to, for example, topographic gradients.

Table B.2: A physiognomic classification of the Serengeti National Park

Category	Sub-category	Description
FOREST	Tree cover with closed canopy. One or more strata more than 7.5m tall	
	▶ **Evergreen Forest**	Forest limited to riverine and springhead stands, mainly evergreen
WOODLAND	Tree cover with one, or rarely two, discontinuous strata. Minimum canopy cover 21 per cent. Grasses and forbs dominate the ground cover	
	▶ **Semi-deciduous Woodland**	Dominated by *Combretum* and *Terminalia* species
	▶ **Semi-deciduous to deciduous Thorn-tree Woodland**	Dominated by *Acacia* and *Commiphora* species
WOODED GRASS-LAND	Conspicuous but scattered trees, Tree Canopy cover less than 21 per cent	
	▶ **Semi-deciduous Thorn-tree Wooded Grassland**	Dominated by *Balanites aegyptiaca* on poorly drained black-cotton clay soils
BUSHLAND	Woody plants of low stature and shrubby. Minimum canopy cover 21 per cent	
	▶ **Evergreen to Semi-deciduous bushland**	Mainly limited to relict stands in the northern Serengeti
	▶ **Semi-deciduous bushland**	Especially on termite mounds in western Serengeti
	▶ **Deciduous bushland**	Dominated by *Acacia mellifera*
BUSHED GRASS-LAND	Scattered bushes in grassland. Canopy cover between 2 and 21 per cent. Dominated by *Acacia* and *Commiphora* species. Includes degraded woodland and bushland	
KOPJE VEGETATION	Vegetation specific to granitic and gneiss rock outcrops. Characteristics and species highly variable	
GRASSLAND	Land dominated by grasses and occasionally other herbs. Tree/bush canopy cover less than 2 per cent	

Source: Adapted from Herlocker (1976)

This mosaic of woodland and grassland provides important dry season grazing and browsing for resident and migratory species. In addition, there are hill-top relict forests that were once more extensive but have since shrunk due to long-term climate change and the effects of fire. Stands of *Borrasus* palm also occur.

Endangered species

The Serengeti ecosystem has eight know threatened animal species as listed on the IUCN Red List database, as listed in Table B.3 below.

Table B.3: The known threatened species of the Serengeti ecosystem

Species		IUCN Red list status
Black Rhinoceros	*Diceros Bicornis*	**Critically Endangered**
African Elephant	*Loxodonta Africana*	**Endangered**
African Hunting dog	*Lyacon pictus*	
Cheetah	*Acinonyx jubatus*	**Vulnerable**
Imperial eagle	*Aquila heliaca*	
Madagascar pond heron	*Ardeola idea*	
Corn crake	*Crex crex*	
Lesser kestrel	*Falco naumanni*	

Migratory birds

The Serengeti is classified as an Important and Endemic Bird Area, with over 500 species of birds that are perennially or seasonally present in the Park. The seasonal migrants are present in the Serengeti between mid-October and around mid-March and include the Intra-African migrants, for example the Madagascar Bee-eater and Black Cuckoo Shrike (*Campephaga flava*) and the Palaearctic migrants, such as the Eurasian Bee-eater (*Merops apiaster*) and Eurasian Golden Oriole (*Oriolus oriolus*).

Seasonality

Rainfall varies both monthly and annually, with the most rain consistently occurring in April and the least in June and July. While this predictable seasonal variation in rainfall is maintained inter-annually, there is considerable and unpredictable variation in rainfall between 'dry' and 'wet' years. As mentioned above, seasonality in rainfall is thought to be one of the main factors driving the Migration.

Permanent surface water

There are a large number of springs, permanent surface water (mostly river-pools) and salt licks scattered throughout the Park upon which wildlife depend for their dry-season sustenance. Due to their scattered nature, they result in a wider distribution of herbivores (and their predators), but in localised concentrations around individual water-sources.

Scenic

Grassland savannah plains

The extensive treeless short grassland plains that lie to the south-east of the Park are what the Serengeti is best known for, and from which the Park derives its name from the Maasai word '*Siringet',* meaning endless plains. From about December until May each year, the plains are grazed by up to two million ungulates, which follow the moving rain-induced productivity around the plains. The plains are where the wildebeest in particular calve, providing mothers and their new-born calves with the nutrition and key micro-nutrients in sufficient quantity that they require.

Large predator – prey population and interactions

The Park is world famous for its abundant herbivore populations – a combined total of up to two million animals, which is the largest in the world. The large number of herbivores supports a correspondingly large population of more than 10,000 predators in a unique setting. The predator population includes a regionally important population of cheetah.

Wilderness

Large areas of the Park are very remote and form extensive wilderness areas, the second biggest in the Tanzania national park system after Ruaha National Park. Access to many of these areas is very difficult in the wet season due to impassable 'black cotton' soils. The wilderness areas have been purposefully underutilised in terms of tourism in order to retain their conservation value. Key wilderness areas include Suba, the Itonjo hills, Nyamuma, Maate and Orangi.

Kopjes

Kopjes, or inselbergs, are a characteristic feature of the Serengeti, particularly the plains, and form discrete bio-geographical island habitats that provide shelter and capture water for distinctive communities of plant and animal species (e.g. caracal, hyrax, wild cat). In addition, they serve as vantage points for both prey and predators and potentially safer areas in which some carnivores (e.g. cheetah and leopard) may hide their young.

Mara and Grumeti riverine systems

The two major river basin systems flowing through the Park – the Grumeti and the Mara – are important components of the ecosystem that while providing water to support terrestrial and avian wildlife also form a well-known natural hazard in the path of the annual wildebeest migration. The rivers are also in themselves major aquatic ecosystems in which a wide range of aquatic life occurs and in which large fauna – such as crocodile and hippo – as well as water-birds are found.

Social

National economic benefits

The Serengeti is one of the most famous national parks and tourist destination in the world, with 150,000 visitors in the financial year 2003-4. This tourism contributes considerable economic benefit to the nation, with revenues from SENAPA amounting to Tshs 5,500 million for 2003/4. In terms of revenue generation, the Serengeti National Park is second to only Kilimanjaro National Park, and together the two parks account for about 77% of TANAPA's total revenue (Gereta *et al.*, 2003). The neighbouring district authorities also benefit through tax revenue and levies; for example, the Serengeti District Authority collects about Tshs 1,100 million per annum from five hotels/ camps operating within the Park. Tourist shops in the Park generate a further Tshs 4 million per annum in terms of taxes (Gereta *et al.* 2003).

Direct economic benefits to communities

The communities neighbouring the Park receive direct economic benefit predominantly through employment with SENAPA departments and tourist facilities; both within the Park and the neighbouring community areas. An example of the latter is Klein's Camp, a 10,000 hectares private wildlife concession bordering the north-eastern boundary of the Park, which is leased from the Maasai community by Conservation Corporation Africa. This arrangement

provides the community with significant income from the annual lease as well as employment opportunities for its members. Another area of direct economic benefit comes from the SENAPA Revenue Sharing Programme, which provides a percentage of Park fees through the Support to Community Initiated Projects (SCIP), described below.

Social services from community outreach

In line with TANAPA's Support for Community Initiated Projects (SCIP), the communities adjacent to the Park are given technical, material and financial assistance to implement community based development projects, such as the construction of school, health and water facilities and feeder roads to villages. The total value of the SCIP projects contributed to by the Park since the start of the scheme in 1992 is about US$ 1,082,000. The SENAPA Community Outreach Department also has a very strong and active conservation education programme, which encourages and supports conservation clubs in over 70 primary schools surrounding the Park. In particular, SENAPA provides educational materials for students including maps, posters and activity books and holds regular teacher training workshops to increase teachers' ability to convey conservation ideas to their students.

Figure B.3: Local school children visiting the Seronera Visitors Centre

Water catchment

The Park is drained by the Mbalageti, Grumeti and Mara Rivers all flowing westwards to Lake Victoria. The Mbalageti River drains 2,680 km^2 of the southern open, treeless grasslands, whilst the Grumeti River drains much of the central and northern hills with a catchment area of 1,100 km^2; nearly all of which are in the Park. The Mara River drains a large area in Kenya (10,300 km^2), and flows through the Park draining only the far north region of the Serengeti. The Park, alongside the Maswa Game Reserve, also protects the watersheds of Simiyu and Duma Rivers. Together these watersheds constitute an important water supply for large numbers of people living to the west of the Park, which is critical to the success of their main economic activities of agriculture and livestock keeping. It is estimated that the Mara River alone supports the annual production of Tshs 17 billion worth of crops in Tarime, Musoma Rural and Serengeti Districts (Gereta *et al.* 2003).

Cultural

National and World Heritage status

The Serengeti National Park was one of the first areas to be gazetted as a World Heritage Site by UNESCO in 1972, based on the range of Exceptional Resource Values described in this section. In 1981 SENAPA, together with the Ngorongoro Conservation Area, became a UNESCO Biosphere Reserve in 1981; one of the world's largest.

Traditional cultural sites

The Serengeti is home to a diversity of cultures, as reflected in the existence of four major language groups within the ecosystem: Bantu (Sukuma farmers), Nilotic (Maasai and Kuria pastoralists), Cushitic (Iraqw agriculturalists) and Khoisan (Hadzabe hunter-gatherers). Although the Maasai are no longer allowed to graze their cattle in the Serengeti National Park, they have inhabited the area since the 17th Century. Evidence of this can be seen at the Moru Kopjes with their well-preserved Maasai rock paintings. The Moru Kopjes are also the site of the famous Gong Rock, which makes a deep sound when struck and was used by Maasai to summon tribal members for ceremonies (see Figure B.4 below). To the west of the Park at Handajega there are also a number of reported traditional worship sites.

Figure B.4: Gong Rock and Maasai rock paintings at Moru Kopjes

Stone Age heritage

The Serengeti Plains have been critical to the unravelling of human origins, with notable discoveries such as the unearthing of the hominoid skull *Australopithecus ("Zinjanthropus") boisei* in the Olduvai Gorge and the early hominid footprints at Laetoli on the SE border of the Park.

Within the Park itself, there are important Middle Stone Age sites at Seronera and Ichumbe Kopje near the Nyamara River. Current archaeological research in the Park is focusing on Middle Stone Age artefacts and faunal remains in the alluvial deposits of the Loiyangalani River. Archaeological samples recovered through test excavations have indicated a high potential for shedding light on key issues in human evolution. For example, the stone tools can reveal the technological and predatory competence of the humans who made them.

SENAPA Purpose Statement

The Park Purpose Statement summarises the importance of the protected area based on the Exceptional Resource Values of the Park, historical considerations, and prevailing national and TANAPA policies. In this context, the primary purpose of the Serengeti National Park is:

> *Park Purpose: To conserve and protect the Serengeti ecosystem, its habitats, biodiversity, migrations of large mammals and birds, and its endemic and threatened species*

Supplemental and complementary purposes of the Park are:

▶ *To safeguard the ecosystem's status as an area of national and international importance, as a Biosphere Reserve and a World Heritage Site*

▶ *To optimise long-term economic benefits to the nation, through sustainable, low impact utilisation that maintains the ecosystem's wild aesthetic beauty*

▶ *To promote and maintain an effective and mutually beneficial partnership with neighbouring communities*

▶ *To preserve all sites of archaeological, historical and cultural importance*

▶ *To maintain and promote the scientific research and educational functions of the Park*

This park purpose statement differs from previous purpose and policy statements by explicitly recognising the important role that the Park plays in the lives and livelihoods of neighbouring communities, in addition to the Park's well-recognised national and international roles. This reflects the social and cultural Exceptional Resource Values identified in the previous section.

The fulfilment of the Park Purpose and the maintenance of the Park's Exceptional Resource Values will be addressed in this GMP through four distinct management programmes, described in the following sections:

Section C: Ecosystem Management Programme
Section D: Tourism Management Programme
Section E: Community Outreach Programme
Section F: Park Operations Programme

SENAPA Zoning Scheme

The SENAPA Zoning Scheme aims to provide a framework for achieving and reconciling the twin management needs of protecting the natural qualities and environment of the Park and regulating and promoting visitor use. The zones identify areas where similar types and levels of use and management emphases are applied; based on the Park's purpose, its Exceptional Resource Values, appropriate park uses, and management objectives.

Figure B.5: Serengeti National Park Zonation
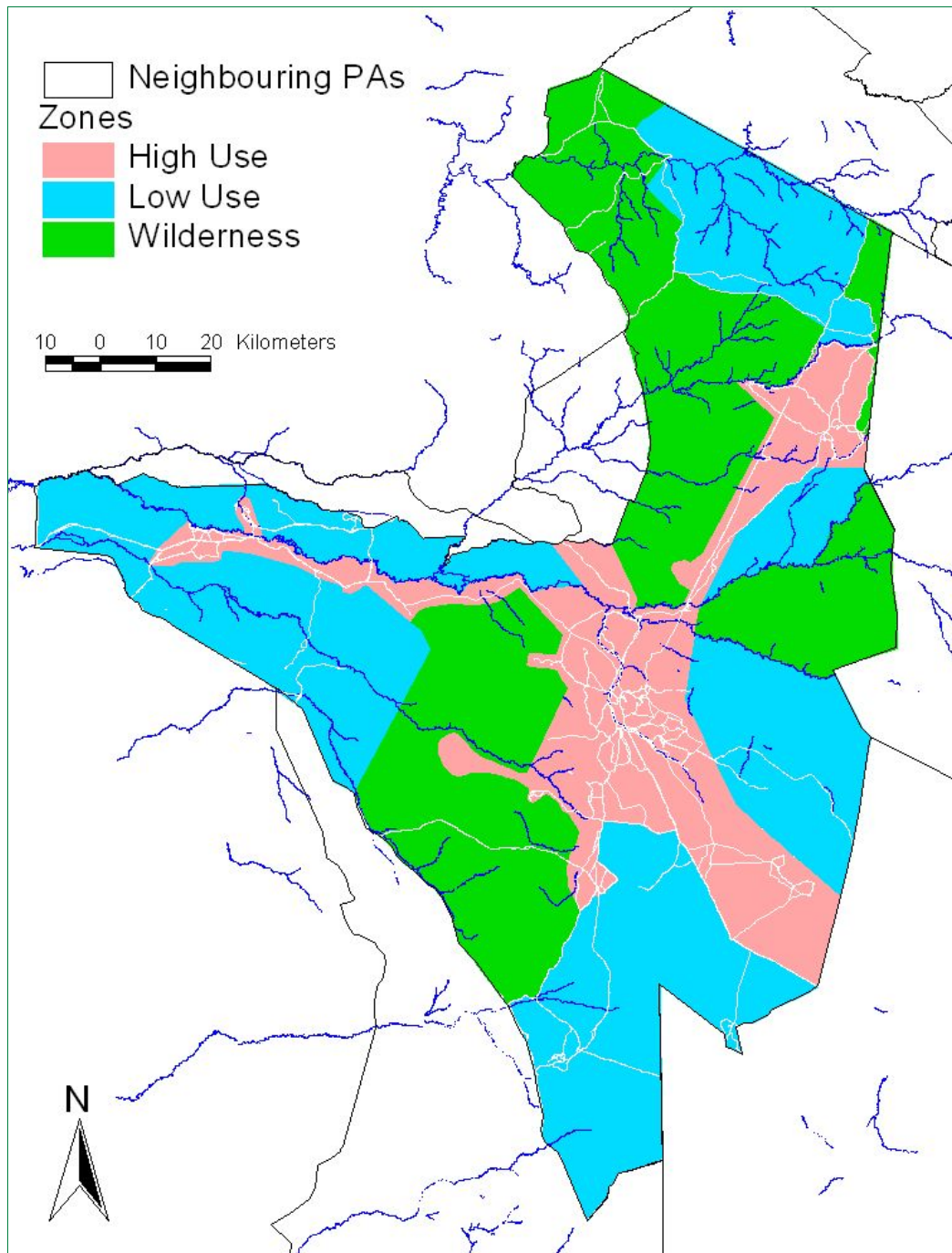
The previous Serengeti Management Zone Plan (1996) designated eight zones; however, these subsequently proved impractical at the Park management level. As a consequence, this GMP has simplified the zoning scheme to the following three zones:

1. High Use Zone
2. Low Use Zone
3. Wilderness Zone

Figure B.5 above defines the zones spatially. Simple zone demarcations are used for easy identification of each zone for administrative purposes. As far as possible, zone boundaries follow roads or clear topographic features, such as rivers, streams and hills.

The three zones are characterised below, with a brief description of the types and levels of visitor use permitted. The Tourism Programme contains the specific details regarding visitor activities, prescriptions and limits of acceptable use for each zone (see Actions 1.1.1, 1.2.2 and 2.1.2 in section D).

High Use Zone
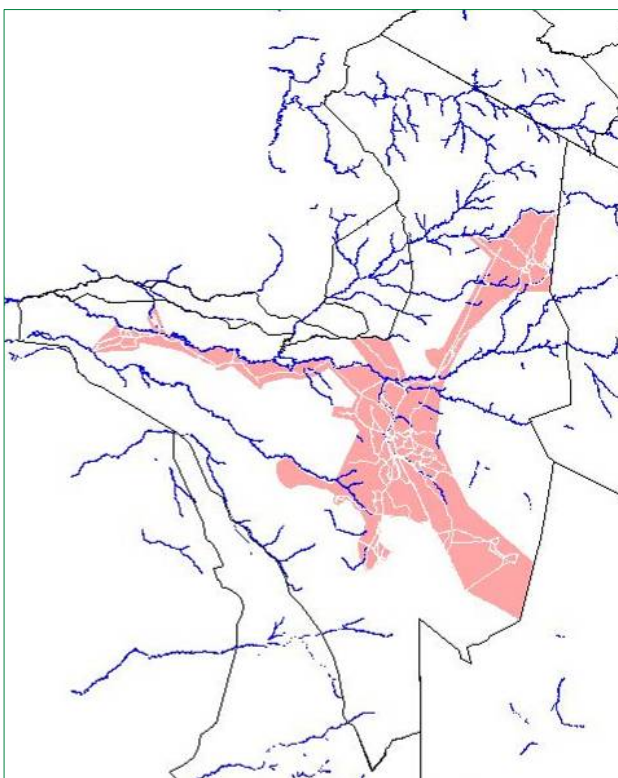
This zone covers 23 per cent of SENAPA and is centred around the Seronera Valley, with segments radiating out to include the areas where tourism infrastructure and use is already high. This includes: to the north east a corridor to Lobo (including Lobo Lodge); to the north-west a strip to Fort Ikoma Gate; to the west a segment south of the Grumeti River, incorporating Grumeti River Tented Camp and Serena Tented Camp; to the south-west Moru and the Mbalageti River (incorporating Sopa Lodge); and to the south east a wide corridor down the Naabi access road, incorporating the Gol kopjes.

This zone is the hub of visitor activity and it contains the highest levels of tourism infrastructure and facilities. This zone will continue to form the major park attraction and will absorb the main concentration of tourists. Game viewing by vehicle along designated roads constitutes the principal visitor activity. However, short guided trail walks and designated "tourism sinks" will provide opportunities for visitors to get out of their vehicles to enjoy the scenery and wildlife.

It is intended that the expansion of the High Use Zone from the previous Management Zone Plan will enable sufficient road networks around some of the main lodges (i.e. Serena, Lobo and Sopa Lodges) so that less visitors will require coming into the Seronera valley itself.

Low Use Zone

This zone covers 42 per cent of SENAPA and is contained in five blocks as shown opposite.

The zone will have a lower number and density of visitors than the High Use Zone, which will result in a low frequency of contact between tourists and moderate to high opportunities for exclusivity and solitude. This is reflected in the more limited road network and in the lower bed capacity (sees the Limits of Acceptable Use in 0 of the Tourism Management Programme). This is the only zone where off-road driving may be permitted in designated areas that will be identified annually by the SENAPA management. In similar ways, as with the High Use Zone, short and half-day guided trail walks and designated "tourism sinks" will provide opportunities for visitors to get out of their vehicles.
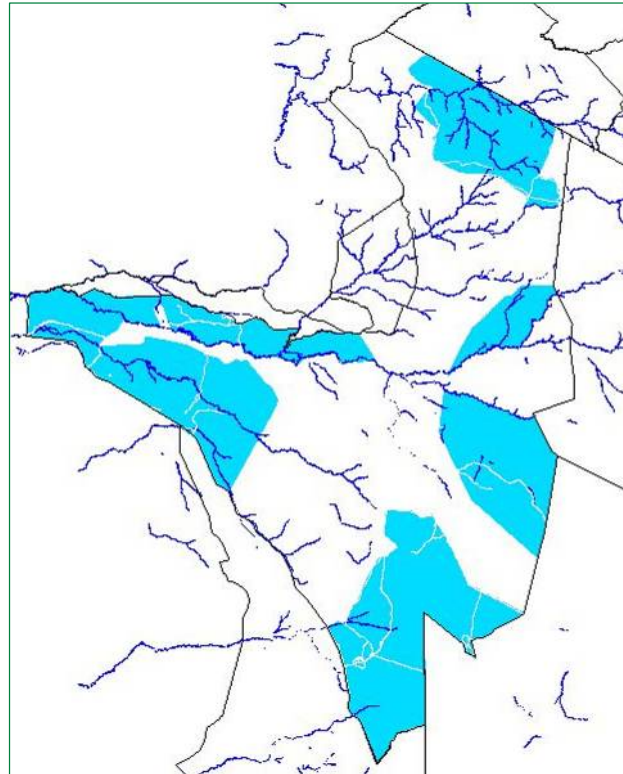
Wilderness Zone
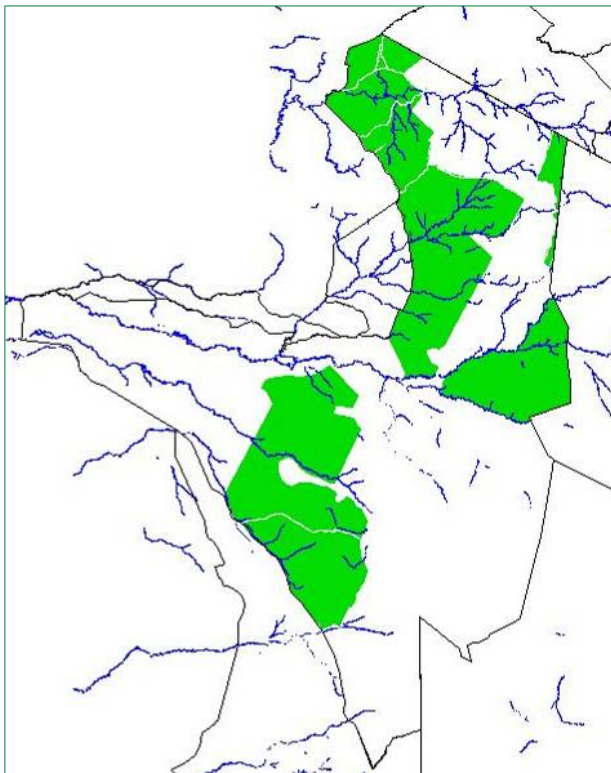
This zone covers 35 per cent of SENAPA and is contained in four blocks. The zone incorporates the mountainous areas of the Park, where the very limited road network and the lack of any facilities already restrict access.

The Wilderness Zone is subject to minimal disturbance. As a result, visitor access will be restricted to walking safaris, with game viewing by vehicle prohibited. The only infrastructure permitted will be a limited number of access roads that can be used by SENAPA management and support vehicles for walking safari operations. Due to the low presence of visitors in this zone, the Resource Protection Department (See section F, Park Operations Programme) will invest more law enforcement personnel and resources to ensure poaching and other illegal activities are controlled and visitor safety is ensured.

ECOSYSTEM MANAGEMENT PROGRAMME

Ecosystem management strategy

> ***Programme Purpose: The Serengeti's key ecological systems, communities and species monitored, assessed, and appropriate management responses taken to mitigate human impacts and to ensure that resource values are not impaired[1]***

The ecosystem management strategy seeks to align the long-term management of the SENAPA ecosystem with the programme purpose defined above and with the relevant national policies. The aim of this strategy is to provide a general statement of principles and policy to guide the ecosystem management programme over the next 10 years.

The principal national policy instruments that the SENAPA ecosystem management strategy has been based upon are the National Policies for National Parks in Tanzania (1994) and the Wildlife Policy of Tanzania (1998). The strategy also builds on the previously approved SENAPA Management Plans (1991 and 1996), so as to ensure continuity where appropriate and to account for the specific context and management needs of the Serengeti ecosystem.

There are five general guiding principles, drawn from national policy, that provide the foundation for this Ecosystem Management Programme:

▸ **SENAPA management will work to maintain all components and processes of the naturally evolving Park ecosystem**, including the natural abundance, diversity, and ecological integrity of plants and animals

▸ **Change is recognised as an integral part of the functioning of the Serengeti** and natural systems in natural zones will not be preserved as though frozen at a given point in time

▸ Although **a non-intervention policy will be pursued in general**, interference with natural processes may occur to maintain wildlife and plant species diversity, to preserve sensitive species [and] to restore native ecosystem functioning that has been disrupted by past or ongoing human activities

▸ SENAPA management will influence the surrounding communities, local and district governments, and other agencies to help **ensure that activities occurring outside the Park do not impair park resources and values**, especially through District planning forums

▸ Research and monitoring will provide an accurate scientific basis for planning, development and management decisions in pursuit of park objectives.

Conserving ecosystem processes

In line with TANAPA policy, the Ecosystem Management Programme will seek to minimise human impacts on natural wildlife population dynamics. In particular, this will involve ensuring the preservation of the migratory wildlife (especially ungulates) and their habitats inside the Park, and initiating cooperation wherever possible with others to ensure the preservation of their populations, preferred migration routes and habitats outside the Park.

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[1] "Impair" – this term is defined by TANAPA as to deteriorate, to damage, or to injure natural and physical resources (e.g. wildlife and geologic features) as well as intangible values (e.g. wilderness character and scenic vistas)

Protecting genetic diversity of native wildlife and plant life

The Ecosystem Programme will endeavour to realise the TANAPA policy of "protecting the full range of genetic types native to plant and animal populations in the Park by perpetuating natural evolutionary processes and minimising human interference with evolving genetic diversity". The need to maintain appropriate levels of genetic diversity will guide decisions on what actions to take to manage isolated populations of species or to enhance populations of *threatened, endangered, rare and endemic species* in order to perpetuate their natural distribution and abundances. SENAPA management will control visitor access and use of critical habitats for these species, and may close such areas to entry, except for official purposes.

The manipulation of native plants may be carried out in small, selected areas in a manner designed to restore or enhance the functioning of the plant and animal community of which endangered species are a natural part, provided it does not alter major processes or key park values. Conversely, the introduction of new exotic species will be prohibited and efforts will be taken to eradicate (where it is economically feasible) all exotic species within the Park, especially those that threaten park resources or public health.

Managing fire regimes

Fire plays a critical role in the shaping of the Serengeti ecosystem, therefore SENAPA management will seek to bring under control and minimise the damage caused by *wildfires* and to promote the use of *prescribed fires* for management purposes. The specific objectives and strategies to be pursued will be stipulated in the *Fire Management Plan* (Technical Detail Plan) for SENAPA[2].

Maintaining hydrological cycles

SENAPA management will ensure the integrity of riverine systems, permanent water sources, springs, floodplains, wetlands and riverine forest in the Park, with particular focus on the Mara, Mbalageti and Grumeti systems. Serengeti surface water will only be withdrawn for consumptive use if *absolutely necessary* during exceptional conditions (e.g. drought), and provided it does not significantly alter natural processes and ecosystems. The only permissible year-round use of surface water within SENAPA will be the Bologonja pipeline supplying water to Seronera, and tourists conducting walking safaris.

In order to convert these guiding principles into practical actions on the ground, this GMP introduces a conservation planning technique that prioritises conservation actions and monitoring of ecosystem components, as described below.

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[2] Currently in preparation

Prioritisation of ecosystem components and threats

As stated in the ecosystem management strategy, SENAPA management will work to *'maintain all components and processes of the naturally evolving Park ecosystem'.* However, due to the inherent complexity of these natural systems, and the limited resources available, it is not possible for the SENAPA Ecology Department to monitor and manage each individual ecosystem component. In response, an ecosystem management planning process[3] has been developed to identify representative ecosystem components and prioritise strategic decisions regarding their conservation. This approach will ensure the optimal allocation of time and resources for implementing conservation strategies to protect and monitor the long-term health and functions of the SENAPA ecosystem. The key features and outputs of this planning process are outlined below.

SENAPA Conservation Targets

The SENAPA Conservation Targets, listed in the box below, cover the various spatial scales and levels of biological organisation that the ecosystem functions at; from ecological systems and processes to individual species. Together the targets represent and encapsulate the unique biodiversity of the Serengeti ecosystem and the components that require special management actions. The underlying assumption behind establishing these Conservation Targets is that, if they are truly representative, then focusing efforts on their conservation will also ensure the conservation of all co-occurring ecosystem components and therefore the maintenance of a healthy ecosystem. The co-occurring ecosystem species, or 'Subsidiary Targets', are listed alongside the eight Conservation Targets in Table C.1 overpage.

Conservation Targets	Ecosystem Level
1. The Migration 2. Mara River	**System**
3. Riverine Forest 4. *Acacia* woodland 5. *Terminalia* woodland 6. Kopje habitat	**Community**
7. Black rhino 8. Wild dogs	**Species**

The final column in Table C.1 lists the Key Ecological Attributes (KEAs), which are the factors that most clearly define or characterise each of the eight Conservation Targets. The KEAs include factors pertaining to the Conservation Target's biological composition, spatial distribution, biotic and abiotic interactions and ecological connectivity. The KEAs are sensitive to change and provide the basis for monitoring the overall health of their respective Conservation Target. The Black rhino and Wild dog Conservation Targets have been identified as requiring special management attention, and restoration actions are needed to bring their KEAs within their minimum threshold level.

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[3] Based on The Nature Conservancy's (TNC) Conservation Action Planning (CAP) process

Table C.1: SENAPA Conservation Targets and Key Ecological Attributes

Conservation Target	Subsidiary Targets	Key Ecological Attribute
The Migration	▶ Migration species ▶ Mara river system ▶ Short-grass plains ▶ Long-grass plains ▶ Migratory birds	Traditional migratory routes and access to critical areas
		Population size of key species
		Productivity of key species
		Forage quality and spatial availability
Mara River		Water flow
		Water quality
		Forest extent and size
Riverine forest	▶ Colobus Monkey ▶ Several bird species (e.g. Schalow's turaco) ▶ Amphibians ▶ Hill-top thicket	Forest extent and size
		Indicator species (e.g. Colobus monkey, Dendrohyrax, B&W Casked hornbill)
		Recruitment rate of key forest species
Acacia woodland	▶ Community of birds and mammals ▶ Tabora Cisticola, Red-throated Tit, Fischer's Lovebird, Grey-breasted Spurfowl ▶ Recruitment of euphorbia	Density of key tree spp.
		Herbivores of woodland
Terminalia woodland	▶ Community of birds (e.g. Tabora Cisticola) and mammals ▶ Oribi ▶ Roan antelope	Density of *Terminalia* spp.
		Herbivores of woodland
Kopje habitat	▶ Pancake tortoise ▶ Rock hyrax ▶ Klipspringer ▶ Agama (reptiles) ▶ Kopje plants	Main xerophytic plant species
		Key mammal species
Black rhino		Suitable woodland habitat
		Population size
		Productivity (recruitment)
		Genetic diversity
Wild dogs		Population size
		Productivity (recruitment)
		Genetic diversity

Ecosystem threats

For this GMP, an ecosystem threat is defined as any factor, resulting either directly or indirectly from human activities, that has the potential to destroy, degrade or impair a Conservation Target in the next 10 years. The identification of threats to the ecological viability of the Conservation Targets are ranked according to the potential level of damage (severity) and geographic extent (scope), as detailed in Table C.2 and Table C.3 below. The threats identified will be monitored by the SENAPA Ecology Department and form the basis for the development of management actions in this Programme.

Table C.2: Threats to SENAPA Conservation Targets

Target	Threat	Severity	Scope	Ranking
The Migration	Decline in Mara River flow rates	Very high	Very high	**Very high**
	Poaching	Very high	Very high	**Very high**
	Cutting of migration routes due to human development & cultivation	High	Medium	**Medium**
	Early dry season fires	Medium	High	**Medium**
	Fencing that creates hard boundaries	Medium	Medium	**Medium**
	Settled agriculture in NCA (bore holes)	Low	Medium	**Low**
	Disease (e.g. rinderpest)	Not ranked		
Mara River	Water diversion and extraction	Very high	Very high	**Very high**
	Water pollution	Medium	Very high	**Medium**
	Bank erosion from flooding	Medium	Very high	**Medium**
Riverine forest	Fire	Very high	Very high	**Very high**
Acacia woodland	Hot unprescribed fires	High	High	**High**
	Cool controlled fires	Medium	Medium	**Medium**
Terminalia woodland	Hot unprescribed fires	High	High	**High**
	Cool controlled fires	Medium	Medium	**Medium**
Kopje habitat	Fire	Medium	Low	**Low**
Black rhino	Poaching	Very high	Very high	**Very high**
	Unviable population size	Very high	Medium	**Medium**
	Inbreeding	High	Medium	**Medium**
	Human disturbance	Medium	High	**Medium**
	Habitat loss through fire	Low	Medium	**Low**
	Disease (e.g. tick borne)	Not ranked		
	Insufficient rhino secure areas	Not ranked		
Wild dogs	Disease	Very high	High	**High**
	Unviable population size	Very high	Medium	**Medium**
	Inbreeding	High	Medium	**Medium**
	Competition with other predators	High	Medium	**Medium**
	Human - Wild dog conflict	Medium	Medium	**Medium**

During the threat assessment, several threats were identified as affecting more than one Conservation Target. To facilitate the visualisation of the relationships between threats and the Conservation Targets, a threat analysis matrix has been developed, as shown in Table C.3 below. It shows that fire is the only crosscutting threat, affecting six out of the eight Conservation Targets. The remaining threats, which in cases present a very high risk, are specific to only one or two Conservation Targets.

Table C.3: SENAPA Threat Analysis Matrix

Threats ⟍ Target	The Migration	Mara River	Riverine Forest	*Acacia* woodland	*Terminalia* woodland	Kopje habitat	Black rhino	Wild dogs
Fire	Medium		Very high	High	High	Low	Low	
Decline in Mara River flow rates	Very high	Very high						
Poaching	Very high						Very high	
Disease	Low					Low		High
Human disturbance/ conflict							Medium	Medium
Unviable population size							Medium	Medium
Inbreeding				Very high			Medium	Medium
Competition with predators								Medium
Park-adjacent developments	Medium							
Water pollution		Medium						
River bank erosion		Medium						

KEY

Overall Threat Level	Very high	High	Medium	Low
Severity (level of damage)	Destroy or eliminate the Conservation Target	Seriously degrade the Conservation Target	Moderately degrade the Conservation Target	Slightly impair the Conservation Target
Scope (geographic extent)	Very widespread or pervasive	Widespread	Localised	Very localised

SENAPA Ecosystem Management Programme Objectives

The prioritised Conservation Targets, Key Ecological Attributes and threats provide the foundation for designing management actions and a monitoring system that will best achieve the Ecosystem Management Programme Purpose, set out above. The implementation of these tasks will be achieved through the two objectives of the Ecosystem Management Programme, which are:

1. The conservation and ecological status of ***SENAPA Conservation Targets enhanced and threats reduced***
2. Regular, management-oriented ***monitoring and assessment*** of key ecosystem values and processes strengthened

Figure C.1 below, illustrates how these two objectives address the restoration and monitoring of Conservation Targets and the reduction and monitoring of the threats.

Figure C.1: Ecosystem Management Programme Overview
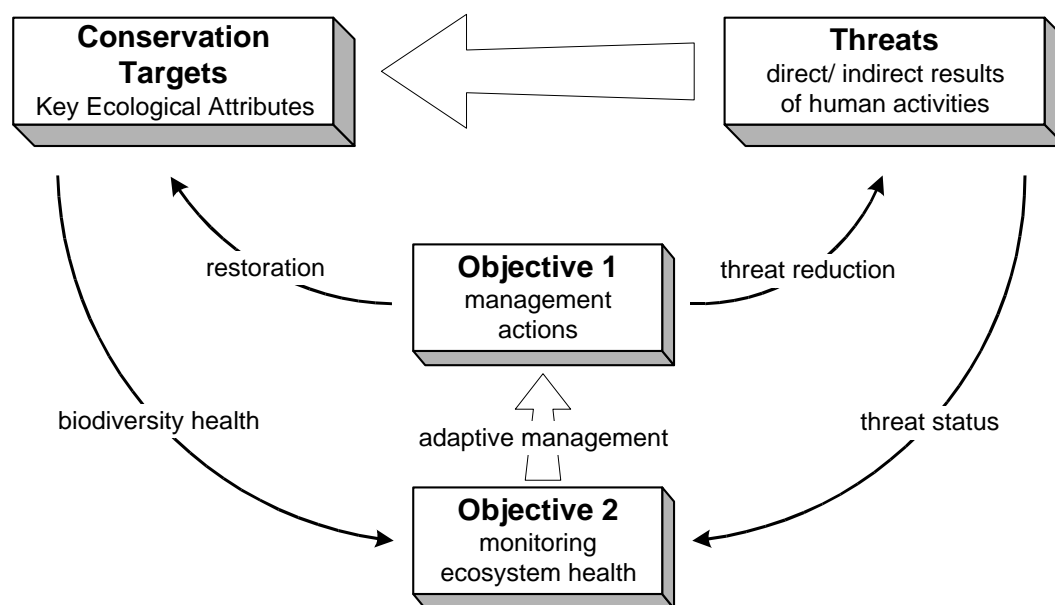
In order to meet Objective 1, a series of 10-year **management targets**, with accompanying **management actions**, have been formulated. Each management target addresses a grouping of threats, as illustrated in Table C.3 above. For each management target there is a brief description of the relevant issues and opportunities, which provide the specific context and justification for the management actions. To support the implementation of these management actions, an initial 3-year Action Plan for the period 2006-2008 is provided, which lists the necessary activities, input requirements, responsibilities and timeframe (see Table G.2 in Section G).

To achieve Objective 2, a framework has been provided for monitoring the health of the Serengeti ecosystem, based on measuring the Key Ecological Attributes and threats to the Conservation Targets.

Figure C.2 below shows the logical framework for the Ecosystem Management Programme.

Figure C.2: Ecosystem Management Programme Logical Framework

**ECOSYSTEM MANAGEMENT
PROGRAMME PURPOSE**

> The Serengeti's key ecological systems, communities and species monitored, assessed, and appropriate management responses taken to mitigate human impacts and to ensure that resource values are not impaired

OBJECTIVES

> The conservation and ecological status of <u>SENAPA Conservation Targets enhanced and threats reduced</u>

> Regular, management-oriented <u>monitoring and assessment</u> of key ecosystem values and processes strengthened

TARGETS

> Human impacts threatening the Migration minimised

> Human impacts to the Mara River monitored and minimised

> Fire extent, frequency and intensity within key habitats managed

> Viable populations of Black rhino restored to the Serengeti

> Viable populations of Wild dogs restored to the Serengeti

Objective 1: The conservation and ecological status of SENAPA Conservation Targets enhanced and threats reduced

The desired future state of SENAPA is one where the threats to the functioning of the Serengeti ecosystem are eliminated and all components and processes are restored to their natural evolving levels.

To achieve this desired state, a series of management targets and associated management actions have been formulated, which adopt one of two main strategies, as illustrated in Figure C.1 above. The first strategy is to reduce the prioritised threats themselves, under the assumption that the removal of threats will ensure the maintenance of the Conservation Targets. However, in the case of Black rhinos and Wild dogs, it is necessary to deploy restoration strategies, with the objective of re-introducing these native ecosystem components that have been disrupted by past and ongoing human activities. In support of successfully implementing these strategies, there are other types of management actions that build capacity, engage stakeholders, or promote priority policy actions.

The management targets have been designed to address the emerging groupings of threats identified in Table C.3 above. The first two management targets address threats to the system-level Conservation Targets, whilst the third management target addresses the crosscutting threat of fire. The final two management targets address the restoration of the species-level Conservation Targets; Black rhino and Wild dogs. As indicated in the threat summary box for each management target, some of identified threats are addressed under other man-

agement targets or in certain cases are not addressed by actions, but simply monitored under Objective 2.

Target 1.1: Human impacts threatening the Migration minimised

The growing human populations and changing land use practices are having an increasing impact on wildlife migration routes outside the Park. The greatest impact is in the northwest, where villages directly border the Park boundary, forming a 'hard edge' (see Figure C.3 below). These villages, which are in Serengeti and Tarime Districts, have had higher than average population growth as a result of immigrants drawn to the park edge by opportunities for hunting, the availability of better agricultural land, and access to a range of other natural resources.

Such 'hard edge' areas represent a challenging management issue, as it is in these areas that people have the greatest adverse impact on the wildlife values of the ecosystem – through hunting and land-use conversion to agriculture, and also where the ecosystem's wildlife imposes the greatest costs on people through, for example, wildlife crop damage. Resident wildlife both within the Park and in the uncultivated areas immediately to the west is under substantial hunting pressure, and populations appear to be much reduced. In addition, there is a substantial offtake of wildlife when the migration passes through or close to these villages.

Figure C.3: Settlement distribution around Serengeti National Park
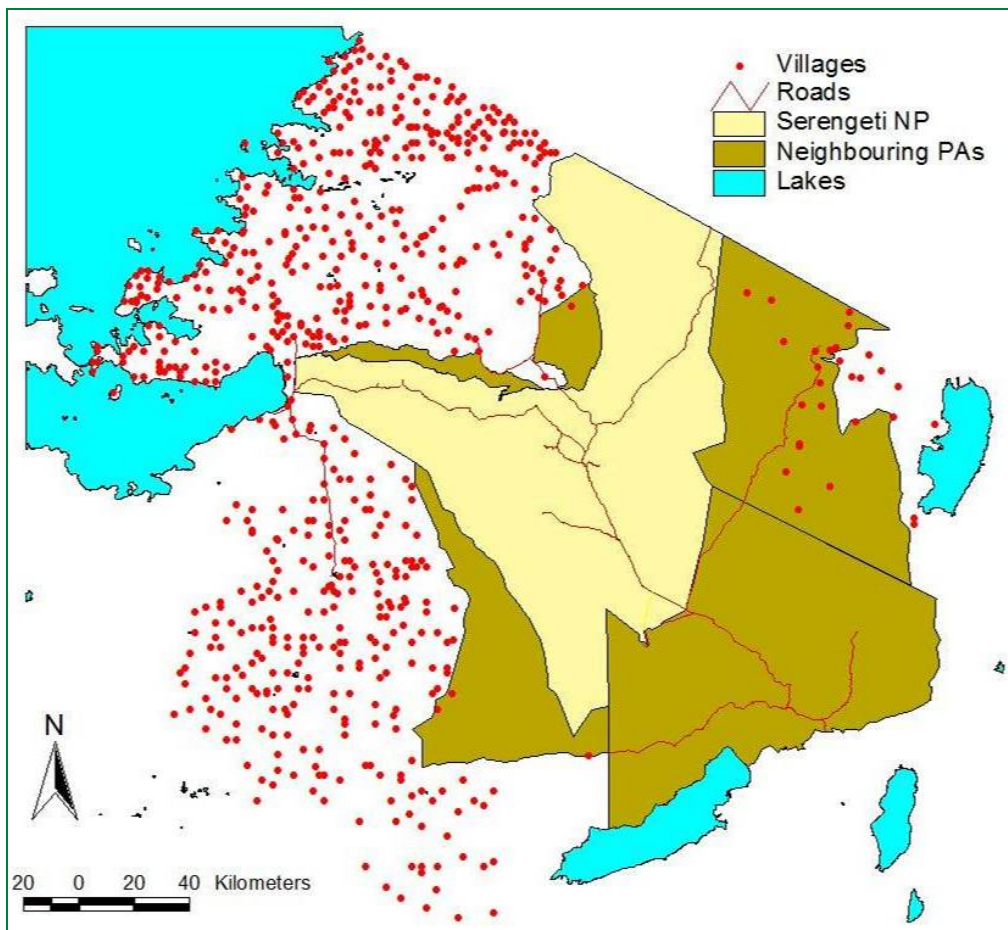
An extract from Table C.3 summarising the threats to the Migration and the management responses is given in the box below.

Threats to the Migration	Threat Level	Response
Decline in Mara River flow rates	**Very high**	See Target 1.2
Poaching	**Very high**	Action 1.1.1 & 2
Park-adjacent developments	**Medium**	Action 1.1.1 & 3
Early dry season fires	**Medium**	See Target 1.3
Disease	**Not ranked**	Action 1.1.1

One of the major threats to the Migration is the decline of the Mara River flow rates, however, this threat will be dealt with under Target 1.2. In addition, Target 1.3 addresses the threat of early dry season fires. The management actions designed to address the remaining threats and enhance the conservation status of the Migration are as follows:

Action 1.1.1: Conduct research to better understand the Migration movements, population dynamics and disease prevalence

The first management action will seek to better understand the Migration, including the population dynamics and diseases that affect it. To achieve this, SENAPA will collaborate with TAWIRI in conducting applied research into migration movements and population dynamics. In addition, SENAPA will carry out routine serum sampling of captured animals and test for disease where necessary. The knowledge gained from this action will provide the foundation for informing the remaining actions of this target.

Action 1.1.2: Support the Resource Protection Department to protect the Migration against poaching and human encroachments

As identified in the threat analysis above, poaching is a 'very high' level threat to the Migration. Efforts to reduce this threat will be made in collaboration with the SENAPA Resource Protection Department. In particular, mobile anti-poaching operations will be established for the key migration months of June and July, and the park boundary demarcation will be improved in key areas. Initiatives will be examined for increasing effectiveness of capturing poachers, including the involvement of local communities and the development of a reward scheme for snares retrieved (see Target 1.1 of the Park Operations Programme).

Action 1.1.3: Advocate and collaborate with partners for the protection of migration routes in the Greater Serengeti Ecosystem

Many of the threats to the Migration occur from human development activities in park-adjacent areas. As identified in Table C.2 and illustrated in Figure C.3 above, human population expansion in neighbouring areas is leading to the cutting of migration routes. This is particularly of concern in the Rubanda section between the western corridor and the northern sector of SENAPA and in the Group Ranch land north of the Masai Mara National Reserve, which provides the northern dry season grassland. Cultivation and the potential erecting of fences in these areas are exacerbating this threat to the Migration.

As these areas are outside the Park's boundaries, SENAPA management will seek to advocate for the protection of migration routes in both Tanzania and Kenya, using the monitoring information collected on poaching, human population settlement, cultivation and livestock

(see the Ecological Monitoring Plan in Table C.4). In support of this advocacy, SENAPA management will influence issues affecting the Migration by taking a proactive role in efforts to collaborate in the conservation and management of the Greater Serengeti Ecosystem. Such actions could specifically involve investigating the feasibility of relocating Rubanda village.

Action 1.1.4: Investigate options for minimising the environmental impact of tourism migration viewing

This final management action, not listed as a threat, has been included as a necessary check and balance to minimise the human disturbance to the Migration created from tourism. This will feed back into the visitor use and impact prescriptions and the Serengeti Code of Conduct (see Target 1.1 of the Tourism Programme).

Target 1.2: Human impacts to the Mara River monitored and minimised

In recent years, the Mara River catchment has been subject to increasing human impact. Responses to address this threat are complicated by the fact that a large proportion (65 per cent) of the headwaters and watershed of the Mara River lies within neighbouring Kenya, and therefore the long-term mitigation of this threat will require cooperation between Tanzania and Kenya.

Threats to the Mara River	Threat Level	Response
Decline in Mara River flow rates	**Very high**	Action 1.2.1 - 2
Water pollution	**Medium**	Action 1.2.1 - 2
River bank erosion	**Medium**	Monitoring only

As identified in the box above, the most serious threat to the Mara River is the loss of water, and in 10 years this threat could eliminate the critical function that it serves within the Serengeti. The factors impacting on the loss of water to the Mara River are:

▶ Increasing loss of forest cover in the River's upper catchment and watercourse
▶ Unsustainable agricultural practices (small and large scale)
▶ Rapid population and settlement growth
▶ Weak local, national and regional policy regimes and institutional structures

Of late there have been three particularly major threats to the Mara River (Gereta *et al.,* *2003*):

▶ The multi-purpose Amala hydroelectric project in Kenya (Kajiado and Narok Districts) – entailing the construction of three dams and the diversion of a large water flow out of the Mara River Basin into the Ewaso Ngiro to the east. It is likely that the Mara River's dry season and drought year river flows will be severely affected should this scheme go ahead.
▶ The continued loss of forest in the River's headwaters through encroachment and de-gazettement of parts of the Mau forest.
▶ The rapid expansion of pump-driven water irrigation from the Mara River for commercial horticulture, maize and sunflower production. This is large scale, and is resulting in a massive draw-down of water from the Mara River.

The Amala project is presently suspended, but the issues of forest loss and pump-driven irrigation are both immediate problems that are severely impacting on the nature of water flow in the Mara River.

The Mara River is also suffering from pollution from agricultural nutrients, agro-chemicals, mining by-products and urban waste. Although this threat is only expected to moderately degrade the river in the next 10 years its effects will be pervasive throughout the river system.

The management actions designed to address these threats and enhance the conservation status of the Mara River are as follows:

Action 1.2.1: Raise awareness on issues affecting the Mara River and advocate for catchment-wide responses at international forums

Up-to-date information on the current status and predicted trends of the Mara River are necessary to provide guidance to policy and decision makers on how best to sustainably manage the Mara River. This management action will advocate for policy interventions that ensure the flow rate is not compromised by activities outside the Park (such as the hydroelectric project in Kenya). To inform this awareness raising and advocacy, more research will be done to monitor and understand the human effects on key parameters of the Mara River, which are:

▶ Water flow - including major rivers and streams feeding into the Mara River, such as the Bologonja River
▶ Water quality - especially relating to agricultural chemicals and fertilisers
▶ Water extraction - including from diversions and boreholes

This information will be collected and analysed through the Monitoring Plan, outlined under Objective 2 of this Ecosystem Programme. In parallel with this data analysis, SENAPA management will keep informed of any changes to land use and economic developments within the catchment, particularly pertaining to transboundary issues and the Mara River in Kenya.

Action 1.2.2: Promote and participate in international collaboration concerning Mara River management

The previous management action establishes a solid foundation of knowledge regarding the Mara River and disseminates this information to influence the broader Mara River catchment stakeholders. This will create the basis for SENAPA management to work with TANAPA HQ in forming collaborations and partnerships within the Greater Serengeti ecosystem that seek to sustainably manage the Mara River.

Target 1.3: Fire extent, frequency and intensity within key habitats managed

Fire is a major management issue for SENAPA. As shown in the box below, fire is the most pervasive threat to the SENAPA Conservation Targets, and the only identified threat to the four habitat-related Conservation Targets.

Conservation Target	Riverine Forest	*Acacia* woodland	*Terminalia* woodland	The Migration	Kopje habitat	Black rhino
Fire Threat	Very high	High	High	Medium	Low	Low
Response	Actions 1.3.1 & 3			Action	Actions 1.3.1 & 3	

		1.3.2-3	

The **Riverine Forest** is ranked as being the most threatened from fire, with the potential that it could be eliminated throughout the Serengeti within the 10-year period of this GMP. There are two different types of broad-leaved Riverine Forest within SENAPA (Bayona and Sharam, 2001), under various degrees of threat as described below:

▶ The first forest type grows along the tributaries of the Mara River. This forest is characterised by an open canopy of *Euclea*, *Diospyros*, *Otea*, and *Croton* species. This forest is rapidly being replaced by grassland, with a loss of 75-85 percent in the past 25 years.

▶ The second forest type grows along the Orangi and lower Grumeti rivers. This forest is composed primarily of species derived from central Africa. Its canopy is composed largely of *Lecaniodiscus*, *Eckebergia*, *Zziphus*, and *Ficus* species. This forest appears to be relatively stable compared to the Mara Riverine Forests, having decreased in size by 25-35 per cent in the past 20 years.

The threat from fire to the **Acacia** and **Terminalia** **woodland** is ranked according to the type of fire. The hot late-season fires pose the greatest threat and have the potential to seriously degrade the woodlands throughout the Serengeti. The "cool" fires are less severe a threat to the woodlands and are expected to only moderately degrade the woodlands on a localised basis.

Kopje habitat is inherently fire resistant and therefore fire only poses a low threat. However, little is known whether fire is an important factor in their ecology. The ranking of the threat for the next 10 years identifies a moderate level of degradation (medium severity) of kopje habitat on a localised scale (low scope).

This management target will address the threats to these four habitats, which in turn will address the fire threat to the natural habitat for the Black rhino Conservation Target. Threats to the Migration from early dry season fires, relate to the availability of dry season grassland forage, and are therefore dealt with separately.

The management actions designed to address these threats and enhance the conservation status of the habitat Conservation Targets are as follows:

Action 1.3.1: Prioritise critical habitats and areas for fire protection within the Riverine forest, Acacia woodland, Terminalia woodland and Kopje habitat

SENAPA does not have the financial or personnel resources to actively protect against fire across all four habitats. Instead sensitive, representative and important areas within these habitats will be selected for concentrating efforts in fire management, as identified in the SENAPA Fire Management Plan.

Action 1.3.2: Identify and preserve adequate areas of dry season forage for migrant species

Within SENAPA there are critical areas of forage that need to be preserved to support the Migration. The critical dry season forage includes areas in the north of SENAPA, including Kogatende, Lamai, Nyamalumbwa, Bologonja, Tabora B and Ndasiata. The critical early dry season forage includes the western corridor and central SENAPA.

Action 1.3.3: Implement fire management measures as per SENAPA Fire Management Plan

In line with the GMP, the SENAPA Fire Management Plan (Technical Detail Plan) will set the objectives for fire management within the Serengeti, and will outline how these objectives will be achieved. Fire management methods will include; fire-breaks - set through early burning - and fire-beating. These methods will be implemented for specific areas through strategic *fire burning regimes*.

The Fire Management Plan will include provisions for the enhancement of anti-poaching efforts around the Riverine Forests. This is in response to poaching camps that have been found in each of the five large remaining forest fragments. Poachers routinely burn the area surrounding these forest fragments and inside the fire breaks to lure animals into the forest. This will be addressed in collaboration with the Resource Protection Department (see Target 1.1 of the Park Operations Programme).

Target 1.4: Restoration of viable populations of Black rhino

The number of Black rhino has dropped to only 63 animals in the Greater Serengeti Ecosystem from a population of around one thousand in 1970; primarily as a result of poaching. There are currently two small populations of Black rhino in SENAPA. The Moru Rhino Area population is located in southern SENAPA near the headwaters of the Mbalageti River. This population has achieved growth rates of 13% (among the best in Africa) and currently comprises 14 rhino: four males (one adult, two subadults and one calf); nine females (four adults, three subadults and two calves); and one unsexed calf. The second population is the transboundary population, which move between SENAPA and the Masai Mara National Reserve in Kenya. Eight rhino have been individually identified in the Tanzania sector; four males (one adult and three subadult) and four females (three adult and one calf).

The Black rhino population currently within the Serengeti is closely monitored and protected within the Moru Rhino Area; a grassland habitat. However, there are no Black rhino found in their natural Serengeti habitat, which are the *Terminalia* woodland, Riverine Forest and hilltop thickets. This management target seeks the restoration of viable Black rhino populations within SENAPA.

Threats to Black rhino	Threat Level	Response
Poaching	**Very high**	Action 1.4.1 - 2
Unviable population size	**Medium**	Action 1.4.1 & 4
Inbreeding	**Medium**	Action 1.4.1 & 4
Human disturbance	**Medium**	Action 1.4.1 & 3
Fire resulting in habitat loss	**Low**	See Target 1.3

As illustrated in the box above, the most severe threat to rhino continues to be from poaching, which could eliminate the existing rhino population from the Serengeti within the next 10-years. The poaching of rhino has in turn led to a number of other threats such as unviable population size and inbreeding. The threat from human disturbance relates to uncontrolled access of tourists visiting the protected rhinos. This threat will be addressed in collaboration with the Tourism Department (See Target 1.1. of Tourism Programme). The loss of the natural woodland habitat for rhinos in the north of the Serengeti is a threat that is addressed by the previous management target regarding fire management.

In January 2005, TANAPA hosted a workshop in SENAPA to discuss the management of the metapopulation of Black rhino in the Greater Serengeti Ecosystem. At this meeting it was recommended that the Serengeti-Mara Ecosystem Rhino Forum be established as a local management group responsible for the coordination of rhino conservation activities. The Forum will have representatives from all the main rhino stakeholders in the ecosystem, e.g. TANAPA, NCAA, WD, Grumeti Reserves, Narok and Transmara County Councils, KWS, FZS and AWF. SENAPA management will play a central role in the establishment and running of this Forum, which will provide a focus for standardised and coordinated monitoring, security and future reintroduction of Black rhinos into SENAPA.

The management actions designed to address these threats and seek the restoration of Black rhinos to the Serengeti are as follows:

Action 1.4.1: Protect existing rhino populations from poaching threats

In order to effectively protect the Black rhino population at Moru, there is a need to enhance the resources and manpower available for anti-poaching efforts. This management action will be implemented together with the Resource Protection Department in an effort to reduce poaching success and secure new habitats for the future planned re-introduction of Black rhinos (see Action 1.1.1 of Park Operations Programme).

Action 1.4.2: Minimise tourism disturbance to Black rhinos

This management action will ensure that visitor access is adequately controlled in the rhino area, especially to the core area away from game viewing trails, where tourist vehicles have been observed driving off-road. The first approach adopted will be to educate tour drivers and visitors against behaviours that negatively impact on Black rhino, through the development and dissemination of the Serengeti Code of Conduct outlined under Target 1.1 of the Tourism Programme. The enforcement of this management action will be done in collaboration with the SENAPA Resource Protection Department.

Action 1.4.3: Design and implement a scheme for the re-introduction of Black rhinos to SENAPA

With such a low population size there is a risk of random extinction from the Serengeti (the Extinction Vortex). For example, the predation of rhino calves by hyenas could be sufficient to wipe out the entire SENAPA population. The building up of a viable SENAPA rhino population, through a re-introduction programme to suitable and secure areas of the Serengeti, will be the focus of this management action; provided that this strategy is in line with TANAPA HQ policy.

This management action will build on previous recommendations and knowledge, gather genetic information relating to the existing populations, and determine and prioritise suitable key areas for new Black rhino sub populations. Once these have been determined it will be possible to supplement the existing populations and establish new sub populations at identified sites.

Target 1.5: Restoration of viable populations of Wild dogs

Although Wild dogs are present in the Serengeti ecosystem, there are no longer any individuals within SENAPA itself. The identified threats that have led to this situation result from disease, human-Wild dog conflict and competition with other predators, as identified in the

box below. Human-Wild dog conflicts include shooting and poisoning, especially around the Gol Mountains.

Threats to Wild dogs	Threat Level	Response
Disease	**High**	Action 1.5.2
Human-Wild dog conflict	**Medium**	Action 1.5.1
Unviable population size	**Medium**	Action 1.5.1 & 3
Inbreeding	**Medium**	Action 1.5.1 & 3
Competition with predators	**Medium**	Action 1.5.1

The management actions designed to address these threats and enhance the conservation status of the Wild dogs are as follows:

Action 1.5.1: Collaborate with TAWIRI, NCAA, communities and others to understand the status of Wild dogs in the entire ecosystem

At present there is no clear understanding of the present distribution of Wild dogs in the Serengeti ecosystem. The first step before moving forward with any re-introduction of Wild dogs to SENAPA is to obtain a clear understanding of Wild dog status in the ecosystem and the reasons for their absence within SENAPA.

Action 1.5.2: Support efforts to reduce threats to the natural re-introduction of Wild dogs to SENAPA

Wild dogs range widely, and often come into contact with human activity. Over half the Wild dogs found dead in Africa have been shot, snared, poisoned, killed by road traffic or infected with diseases by domestic dogs outside protected areas (Woodroffe *et al*, 1997). This management action will primarily build on existing activities to reduce the threat of disease from surrounding domestic dog populations. This will be achieved through the control of rabies and canine distemper in domestic dogs.

Based on the findings of Action 1.5.1, this management action may be expanded to reduce threats to the potential natural re-introduction of Wild dogs to SENAPA from human-Wild dog conflicts, such as poisoning and snaring. These activities will be done in collaboration with the Outreach Department's human-wildlife conflict mitigation activities (see Community Outreach Programme Action 1.2.3).

Action 1.5.3: Explore the potential and practicalities for the re-introduction of Wild dogs into SENAPA

Depending on the recommendations of Action 1.5.1, SENAPA management will seek endorsement from TANAPA HQ for establishing a re-introduction programme for Wild dogs. Provided that this endorsement is obtained, the major activities will include a feasibility study of the possibility for Wild dog re-introductions within SENAPA; including understanding the threat from predator competition and the minimum number of Wild dogs required for a successful re-introduction. The feasibility study will also require the identification of possible populations that can serve as source populations for re-introductions, especially populations that are currently under threat.

Objective 2: Regular, management-oriented monitoring and assessment of key ecosystem values and processes strengthened

The desired future state of SENAPA is one where the evolving ecosystem functioning and status are understood and where this knowledge is used to make informed management decisions to achieve the Park's objectives. To achieve this desired state, a framework has been developed in this GMP for future monitoring of the health of the SENAPA ecosystem, and to provide the basis for the development of a comprehensive SENAPA Ecological Monitoring Plan (Technical Detail Plan).

The SENAPA Ecological Monitoring Plan will monitor the health of the Serengeti ecosystem; i.e. the sustained maintenance or enhancement of the viability of the Conservation Targets. The plan will also monitor both the threats to the Conservation Targets as well as the Key Ecological Attributes of the Conservation Targets, as illustrated in Figure C.1 above. The objective will be to not simply focus on monitoring *per se*, but also on analysing and using the information collected to better inform management decisions. As the Serengeti ecosystem is broader than the boundaries of SENAPA, it is important that the monitoring includes areas outside SENAPA wherever possible. These activities will be coordinated with natural resource managers and researchers from the Greater Serengeti ecosystem (both in Kenya and within Tanzania).

The framework for the Monitoring Plan is set out in 0 overpage. The indicators provide the measurable entities for assessing the status and trends of the KEAs or threats to each Conservation Target. The indicators are designed to be easy to measure and to provide an early warning to serious threats that require mitigating actions. Included in the Plan framework is the data collection methodology, which identifies how, when, where and who will collect the data for the indicators.

Development of the Ecological Monitoring Plan firstly requires a baseline to be established; not only for future comparisons but also to enable the establishment of clearly defined indicators and, where appropriate, the limits of acceptable change. The limits of acceptable change will take into account natural variability in key ecological attributes and guide conservation action aimed at managing a target's attributes within this natural variability. Once the baseline and specific indicators are established, it will be possible to periodically collect, analyse and integrate monitoring information into management decision-making and practice.

Mitigation of environmental impacts of major Ecosystem Programme actions

No negative environmental impacts are anticipated from the implementation of management actions identified to achieve this objective.

Table C.4: Framework for the SENAPA Ecological Monitoring Plan

Key Ecological Attribute/ Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsibility	Data currently collected?
Conservation Target 1: The Migration						
KEA: Traditional migratory routes	Seasonal migratory movements in: - West of the Grumeti River (Ikona WMA); - Grumeti and Ikorongo GRs - East Kuka/ West Loliondo route to Kenya; - Masai Mara NR and Group Ranch land - Salei Plains; - Lake Victoria; - Maswa GR	Wildebeest Collars & aerial surveys	Annually	Research monitoring reports	SENAPA, FZS, TAWIRI	Yes, but many collars no longer functional
KEA: Population size of key species	Large ungulates	Aerial surveys & photographs	Two years	CIMU (SENAPA, WD, NCAA, FZS)	CIMU (SENAPA, WD, NCAA, FZS)	Yes
	Key carnivores except lions	Ground transects	Five years	Tanzania Carnivore Centre	Tanzania Carnivore Centre	Yes, but not systematic
	Lions	Photo IDs on the plains, call back experiments	Five years	Tanzania Carnivore Centre	Tanzania Carnivore Centre	Not yet systematic
KEA: Productivity of key species	Recruitment	Sampling transects to assess ratio of juveniles to females (or adults if sex differentiation difficult)	Two years	Research monitoring reports	SENAPA Ecological Monitoring	No
	Mortality	Die-offs: sampling blood and tissue from dead animals	Opportunistic sampling to determine cause	Research	TANAPA Vet. Dept & SENAPA Ecological Monitoring, TAWIRI	No

Key Ecological Attribute/ Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsibility	Data currently collected?
KEA: Forage quality and spatial availability	Rainfall pattern & trends	Rain gauges	Daily & Monthly	Research monitoring reports	SENAPA Ecological Monitoring	Yes
KEA: Forage quality and spatial availability Threat: Early dry season fires	Fire patterns & extent of dry season fires	Satellite images; and aerial and ground surveys to assess frequency of fires and scarring	Variable (although annually, mid-dry season for extent of dry season fires)	Modis and Research monitoring reports	SENAPA Ecological Monitoring	Yes. But more information needs to be collected. Awaits Fire Management Plan
Threat: Decline in Mara River Flow Rates	Flow rate of Mara River	See minimum flow rate indicator for the Mara River Conservation Target				
Threat: Poaching	Continuing increase in poaching	Questioning apprehended poachers; offtake based on number of snare types & success rates	Opportunistic	SENAPA Resource Protection Department	SENAPA Protection Department	
Threat: Cutting of migration routes	Human, livestock population pressure and extent of cultivation near migratory routes, especially around: - Rubanda area - Loliondo area - Group Ranches to north of Masai Mara NR - Maswa - Lake Victoria	Assessment of census data, village records, village photo points and satellite data	Annually	Bureau of Statistics (pop. Data), SENAPA Outreach Department (village records), and Modis (satellite)	SENAPA Community Conservation Service	No
Threat: Fencing (creating hard boundary)	Presence of fences	Ground marker surveys	Annually	Field Survey Reports	SENAPA Protection Department, Land Use Surveyors	Yes, but not for all areas

Key Ecological Attribute/ Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsibility	Data currently collected?
<u>Threat</u>: Settled agriculture in NCA (bore holes)	Extent of settled agricultural areas in the NCA	Ground surveys to assess occurrence of bore holes in NCA	Three years	NCA records	SENAPA Ecological Monitoring tracking the situation	No
<u>Threat</u>: Disease	Incidence of disease, including: - Rinderpest, anthrax (ungulates) - Canine distemper (carnivores)	Disease surveillance	Monthly	Research monitoring reports/Vet	SENAPA (Vet)	Yes
Conservation Target 2: The Mara River						
<u>KEA</u>: Water flow	Minimum flow rates	Physical flow rate and pressure/ temperature recorded at Kogatende Bridge	Monthly (flow rate); Every 30 minutes (for pressure/ temperature)	Research	SENAPA Ecological Monitoring	Yes
<u>Threat</u>: Water diversion and extraction	Increase in water extraction levels	Assessment of data regarding commercial and household water extraction and levels of deforestation in the wider catchment	Annually	Records of Mara catchment from outside SENAPA	SENAPA Ecological Monitoring	Yes, but not compiled in one place
<u>KEA</u>: Water quality <u>Threat</u>: Pollution	Dissolved oxygen, pH, salinity, clarity, temperature	Data collected from near Kogatende Bridge, using Eric & Gereta Method	Monthly	Research	SENAPA Ecological Monitoring	Yes
<u>KEA</u>: Forest extent and size <u>Threat</u>: Bank erosion	Forest extent, size and cover (inside SENAPA)	Photo points, with markers to be placed as reference points	Five years (wet and dry season)	Research	SENAPA Ecological Monitoring	Yes

Key Ecological Attribute/ Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsibility	Data currently collected?
Conservation Targets 3-6: Riverine Forest, *Acacia* woodland, *Terminalia* woodland, Kopje habitat						
Threat: Fire	Extent, frequency and heat of fire	Fire monitoring data sheet; field observation; satellite images	As required	Research monitoring reports and Modis	SENAPA Ecological Monitoring	Awaits Fire Management Plan
Conservation Target 3: Riverine Forest						
KEA: Forest extent and size	Size and fragmentation of prioritised areas (both protected and unprotected)	Aerial photo coupled with ground markers; review satellite data when available	Five years	Existing trial plots and other key areas that are designed to monitor changes	SENAPA Ecological Monitoring & GIS Unit	Yes but new data required
Conservation Target 4: *Acacia* woodland (suspected cycles of woodland/ grassland)						
KEA: Density of key tree species	Changes in tree cover	Photo points; Satellite imagery involving GIS and related to the vegetation maps	Five years	Existing records, vegetation map, GIS (field ground-truthing if necessary)	SENAPA Ecological Monitoring, Researchers, students, etc.	Few data available, more needed
KEA: Herbivores of woodland	Resident ungulate species	Ground counts and/or aerial census data	Three years	Existing records, vegetation map, new map, GIS, field observation	SENAPA Ecological Monitoring, GIS & CIMU	Few data available, more needed
Conservation Target 5: *Terminalia* woodland						
KEA: Density of *Terminalia* tree species	Changes in tree cover	Photo points; Satellite imagery involving GIS and related to the vegetation maps	Five years	Existing records, vegetation map, GIS, (field ground-truthing if necessary)	SENAPA Ecological Monitoring, Researchers, students, etc.	Few data available, more needed
KEA: Herbivores of woodland	Oribi density	Ground counts by transects	Three years	Field data	SENAPA Ecological Monitoring & CIMU	Some data exists (Mduma)

Key Ecological Attribute/ Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsibility	Data currently collected?
Conservation Target 6: Kopje habitat						
KEA: Main kopje plant species	Number of xerophytic species & xerophytic plant cover	Permanent sampling sites using photo points, quadrats and transects	Five years	Vegetation survey reports	SENAPA Ecological Monitoring	No
KEA: Key mammal species	Density of klip-springer and two hyrax species	Standard sampling effort	Five years	Animal census reports	SENAPA Ecological Monitoring	No
Conservation Target 7: Black rhino						
KEA: Suitable woodland habitat Threat: Habitat lost through fire	In the north: - *Terminalia* - Riverine thickets - Hill thickets; In the west: - *Sensievaria* - *Salvadora* spp etc.	Aerial photos with ground markers	Five years	Existing records, vegetation maps, GIS	SENAPA Ecological Monitoring	Yes Also see indicator for Conservation Target 3-6
KEA: Population size	Rhino numbers	Total counts	Annually	Rhino status project report	Rhino project, Protection and Ecology Depart.	Yes. Daily, weekly, monthly, quarterly and annually
KEA: Productivity (recruitment)	Sex ratio and age structure	Direct observation	Annually	Rhino status project report	Rhino project, Protection and Ecology Depart.	Yes. Daily, weekly, monthly, quarterly and annually
Threat: Poaching	Increase in poaching mortality	Field observation	Routine collection, annual analysis	Rhino status project report	Rhino project, Protection and Ecology Depart.	No
Threat: Unviable population size	Rate of change of population size	Field observation	Routine collection, annual analysis	Rhino status project report	Rhino project, Protection and Ecology Depart.	No

Key Ecological Attribute/ Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsibility	Data currently collected?
Threat: Human disturbance	Number of visitors in rhino conservation area	Ranger observations to monitor vehicles numbers in area	Routine collection, annual analysis	Ranger reports	Rhino project	No, but easy to start
	Stress hormones	Rhino dung studies	As required	Research project		No, funding required
Threat: Insufficient rhino secure areas	Extent of rhino secure areas	Management esti-mates	Annually	Rhino status project report	Rhino project, Protec-tion and Ecology De-part.	No
KEA: Genetic diversity Threat: Inbreeding	Requires a research element before constructing monitoring system					
Conservation Target 8: Wild dog						
KEA: Population size	Wild dogs numbers	Total count by photo IDs	At least annually	Special efforts to look for animals	SENAPA Ecological Monitoring/ Vet. De-partment	Yes
KEA: Productivity (recruitment)	Pack size, sex ratio and age structure	Total counts by photo IDs	At least annually	Special reports/efforts	SENAPA Ecological Monitoring/ Vet. De-partment	Yes
Threat: Disease	Disease incidences in domestic dogs			Vet/Ecology reports	SENAPA Ecological Monitoring/ Vet. De-partment	Yes
	Disease prevalence in Wild dogs, immu-nological history	Immobilisation, sub-ject to approval by appropriate authori-ties		Vet/Ecology reports	SENAPA Ecological Monitoring/ Vet. De-partment	Yes
Threat: Unviable population size (isolated)	Rate of change of population size	Field observation	At least annually	Vet/Ecology reports	SENAPA Ecological Monitoring/ Vet. De-partment	
Threat: Competition with other predators	Increase in other predator populations	See Population size of key species indicator for The Migration Conservation Target				

Key Ecological Attribute/ Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsibility	Data currently collected?
<u>Threat</u>: Human – Wild dog conflict	Incidence of shooting, poisoning and other conflicts, especially around Gol Mountains	Surveys and casual observation	Opportunistic	Vet/Ecology reports	SENAPA Ecological Monitoring/ Vet. Department	No
<u>KEA</u>: Genetic diversity <u>Threat</u>: Inbreeding	Requires a research element before constructing monitoring system					

TOURISM MANAGEMENT PROGRAMME

Tourism management strategy

> ***Programme Purpose: SENAPA tourism managed and developed in order to provide an outstanding experience for both local and international visitors, optimal economic benefits to the nation, TANAPA, private sector partners and local communities, and minimal impacts on the Park's resource values***

The SENAPA tourism strategy seeks to align the long-term development of tourism in the Serengeti with the programme purpose described above and with national tourism policies and action plans. The aim of this strategy is to provide a general statement of principles and policy to guide the Tourism Programme over the next 10 years.

The principal national policy-level instruments that the SENAPA tourism strategy has been based on are: the National Policies for National Parks in Tanzania (1994), the Wildlife Policy of Tanzania (1998), the revised National Tourism Policy (1999), and the Integrated Tourism Master Plan (2002). The strategy also builds on the previously approved SENAPA Management Plans (1991 and 1996), so as to ensure continuity where appropriate and to account for the specific context and management needs of the Serengeti.

The main objective of the National Tourism Policy that underpins the development of all tourism in Tanzania is: '*to promote the economy and livelihood of the people … through encouraging the development of sustainable and quality tourism that is culturally and socially acceptable, ecologically friendly, environmentally sustainable and economically viable*'. The Integrated Tourism Master Plan was formulated to implement this policy, with its core strategy being to develop '*an integrated tourism product that is capable of attracting a low volume, high yield segment of the international tourism market*'. In conjunction with this strategy, and in compliance with the National Tourism Policy, '*deliberate plans will be put in place to promote domestic tourism'*.

In response to these national policies, tourism at SENAPA will be enhanced, diversified and dispersed in order to increase visitor numbers and optimise revenue; whilst at the same time reducing visitor density, so as to maintain the wilderness character of SENAPA and its low-density tourism opportunities. This policy is in keeping with the previous SENAPA Management Zone Plan and provides a contrast with the high volume tourism opportunities available in the adjacent Ngorongoro Conservation Area and the Masai Mara National Reserve in Kenya.

To be able to achieve an outstanding visitor experience with minimal impacts, all tourism facilities and activities must be compatible with SENAPA's conservation objectives and regularly monitored to ensure that environmental quality is maintained. In this respect, only those types of tourism activities that contribute to the understanding and appreciation of park resources and minimise impact on natural, cultural, aesthetic and scenic values will be allowed. In essence, it is intended that **tourism will be seen as a conservation tool that proactively assists the SENAPA park management**.

The SENAPA tourism strategy incorporates a set of principles designed to promote the achievement of the tourism programme purpose and to ensure alignment with national policies and strategies, as described below:

Diverse visitor experience

SENAPA will offer a diverse range of appropriate visitor experiences to a wider range of landscapes and resources within the Park, especially in the lower density areas such as the

northern sector. In particular, non-vehicle based opportunities will be developed where visitors can safely experience outstanding natural and cultural features. This dispersal of tourist activities will also reduce the tourism concentrations and vehicle use in the Seronera Valley and other high-density areas.

Within the broader ecosystem, SENAPA management will take an active role to encourage the development of circuits that take tourists through the Park and on to areas and tourism facilities outside the Park; provided these do not overload the existing SENAPA services and infrastructure. Wherever possible, these circuits will promote community participation. For '*it is imperative for communities living within or around these* [protected] *areas to be fully involved in the development and management of these attractions and in addition, to get a share of the income generated from tourist activities within their area*' (National Tourism Policy).

Limits of acceptable use

The National Tourism Policy recognises that in order to ensure the continued satisfaction of visitors, it is essential to '*put into place mechanisms that will ensure tourist activities respect the use of biodiversity and wildlife conservation'*. The types and levels of appropriate recreational use will be determined through the SENAPA Zoning Scheme (see Section B) and the associated tourism prescriptions and limits of acceptable use. This zoning scheme will restrict and sympathetically locate recreation activities to those directly associated with the park's resources and consistent with their protection. In keeping with the wilderness character of the Park, "high profile" activities will continue to be prohibited (e.g. hang gliding or marathon races). In addition, tourist use will be further restricted and controlled in areas encompassing endangered, rare and threatened wildlife and habitats.

Appropriate facilities

Within SENAPA, no development can happen unless it is in accordance with the Park's Zonation Scheme, or fits within the overall strategy of the GMP. According to management zones, the Tourism Programme will determine the number, type, location and size of all tourism facilities located in the Park. The Tourism Programme will also designate stopping places ("tourism sinks") at points of specific interest, to reduce congestion on the roads and to encourage the diversification of visitor use.

Outside of the Park, SENAPA will seek to influence the development of tourist facilities and services, in order to ensure that they complement what is being developed in the Park and so as to encourage neighbouring ecosystem partners to cooperate and integrate with the SENAPA Management Objectives.

A learning experience for visitors

Tourism in SENAPA will offer interpretative and educational services and facilities to visitors who wish to learn about the resources within the Park that contribute to SENAPA's designation as a World Heritage Site and a Man and Biosphere Reserve; and its role in national conservation and environmental strategies. A programme of additional complementary interpretative and public information facilities will be developed and coordinated with the Serengeti Visitor Centre.

Partnerships and cooperation

Opportunities will be developed to improve the interactions between SENAPA management, visitors and the tourism industry, in order to improve the service provided and the quality of

the visitor experience. In accordance with the National Tourism Policy, the private sector will take responsibility for developing tourism, while TANAPA will provide a catalytic role to regulate, promote and facilitate this development. In this respect, SENAPA management will develop public-private partnerships to encourage tourism professionals to invest and operate suitable tourism products within SENAPA; and where appropriate, will play an advisory role for transparent negotiations between private-community tourism ventures bordering the Park.

These guiding principles of the SENAPA tourism strategy provide the basis for the **objectives** of the Tourism Programme that define the future desirable state at SENAPA and address the relevant problems and issues facing the SENAPA management. The four objectives are:

1. *Visitor access and use developed and enhanced* in environmentally appropriate and sustainable ways
2. SENAPA *visitor facilities improved* in order to provide an optimal tourism experience with minimal environmental impact
3. SENAPA *interpretive centres and materials* are high quality, relevant, informative and educational
4. *Tourism management improved* in collaboration with tourism industry partners

In order to meet these objectives for the Tourism Programme, a series of 10-year **management targets**, with accompanying **management actions**, have been formulated, as described in the following sections. For each management target there is a brief description of the relevant management issues and opportunities, which provide the specific context and justification for the management actions. Table G.3 in Section G contains the **3-Year Action Plan** for the Tourism Programme for the period 2006-2008, which lists the activities, responsibilities, timeframe and input requirements necessary for the completion of the management actions.

Figure D.1 over page shows the logical framework for the Tourism Management Programme.

Objective 1: Visitor access and use developed and enhanced in environmentally appropriate and sustainable ways

The desired future state of SENAPA is one where visitors can enjoy the wilderness character of the Serengeti and have the opportunity to observe the full diversity of wildlife in its natural habitats. The two complementary management targets to achieve this desired state are firstly to minimise visitor impact and secondly to diversify activities, as described below.

Target 1.1: Disturbance of key habitats, wildlife populations and other exceptional resources minimised

Vehicles are the primary cause of disturbance to sensitive habitats and wildlife in SENAPA. This mainly impacts on the High Use Zone (see SENAPA Zoning Scheme in Section B above) including Seronera (Maasai Kopjes, Sixteen, Vidimbwini), Simba, Gol, Ndutu and Naabi areas, with the problem most serious in the Seronera Valley where vehicle disturbance occurs year-round. However, during migration periods, disturbance can also be acute in areas such as the Gol/Moru Kopjes. Events occur almost daily, and more than 10 cars can be crowded around animals, such as lions, leopard, cheetahs, etc. Radio communication between cars has aggravated the problem and also undermines park patrols, as drivers inform each other where the patrol vehicles are. Thus it is very difficult to catch drivers breaking rules.

Figure D.1: Tourism Management Programme Logical Framework

**TOURISM MANAGEMENT
PROGRAMME PURPOSE**

SENAPA tourism managed and developed in
order to provide an outstanding experience for
both local and international visitors, optimal
economic benefits to the nation, TANAPA,
private sector parners and local communities,
and minimal impacts on park resorce values

OBJECTIVES

Visitor access and use enhanced in environmentally appropriate and sustainable ways	Visitor facilities improved to provide an optimal tourism experience with minimal environmental impact	Interpretitive centres and materials are high quality, relevant, informative and educational	Tourism management improved in collaboration with tourism industry partners

TARGETS

Disturbance of key habitats and wildlife populations minimised	Tourism access and use diversified in appropriate ways	Visitor facilities improved and expanded	Env. impact of tourism facilities monitored and regulated	Improved and expanded visitor interpretation facilities	Supply of visitor information materials improved	Tourism administration & information systems strengthened	Tour industry - SENAPA communication & cooperation strengthened

The establishment of comprehensive, clear and enforceable guidelines and mechanisms that will ensure the well-being of Serengeti's wildlife and the maintenance of key habitats; at the same time providing a high level of visitor satisfaction and safety, are a high priority of this GMP. In order to meet this management target, the following management actions have been formulated:

Action 1.1.1: Implement zonal and park-wide prescriptions to regulate visitor use and impact

Under this GMP, the Zoning Scheme for the Serengeti has been updated and consolidated from the previous management plans (see Figure B.5). Prescriptions have been formulated for these revised zones providing guidance to SENAPA and park users of acceptable types and levels of use and impact. The permissible activities as well as the specific use and infra-structure prescriptions are listed in Table D.1 over page.

In the *High* and *Low Use Zones*, game viewing by vehicles will be the main visitor activity permitted, with driving restricted to designated roads and tracks. However, SENAPA will as-sess implementing a pilot scheme for permitting off-road driving for specific seasons in des-ignated areas within the *Low Use Zone* (see Action 1.2.5). Certain non-vehicle based activi-ties will be permitted in the High and Low Use Zones, including short guided trail walks and "tourism sinks", as defined and described under Action 1.2.1.

Table D.1: Tourist Activities and Prescriptions by Zone

Zone	High Use Zone	Low Use Zone	Wilderness Zone
Activities	▶ Game viewing by vehicles ▶ Short guided walks from lodges and special features (accompanied by armed guard if necessary) ▶ Ballooning ▶ "Tourism sinks" for specific visitor activities	▶ Game viewing by vehicles (max 2 tonnes) ▶ Short and half-day guided walks (accompanied by armed guard if necessary) ▶ "Tourism sinks" for specific visitor activities	▶ Walking safaris • Fly camping • Vehicle-supported wilderness camping
Use Prescriptions	▶ Only on-road driving is permitted ▶ Vehicles on unmade tracks must weigh 2 tonnes or less ▶ One balloon operator will be permitted to run two balloons in Seronera area and a new ballooning concession will be permitted in the Western Corridor	▶ Unmade tracks for game viewing (2 tonne vehicle maximum) ▶ Naabi Access Road restrictions (no off-road driving) ▶ Off-road driving is prohibited except in designated areas that have been identified each year by SENAPA management. ▶ Off-road driving is not permitted after rains and is restricted to radio-equipped 4x4 vehicles ▶ Specialist driver training in off-road driving techniques and procedures may be required by SENAPA management	▶ Only light, mobile and self-reliant wilderness campsites permitted, using camouflaged camping techniques ▶ Wilderness camps to be located near zone edges ▶ Park management can relocate camping areas that are overused ▶ Walking fees will apply for all nights spent at wilderness camps whether or not walking takes place ▶ Walking groups will be accompanied by an armed professional walking guide (who has responsibility for the group) and an armed TANAPA Ranger ▶ 2 tonne vehicle maximum for access roads ▶ "Leave No Trace" Principles for camping apply ▶ Rubbish must be carried out from campsites Sewerage to be emptied at designated areas, although biological waste can be disposed on site using agreed low impact techniques
Infrastructure Prescriptions	▶ No more bed capacity without equivalent expansion of facilities, roads and tourism sinks	▶ Only permanent and non-permanent tented camps allowed ▶ Permanent access roads permitted to facilities ▶ Commercial airstrip development to be determined on merit	▶ No permanent structures permitted, apart from access roads to wilderness campsites

No game viewing by vehicles is permitted in the *Wilderness Zone*, with visitor use being re-stricted to walking safaris. Two types of walking safaris will be permitted. Firstly, fly camping, where all the equipment and supplies will be carried by the walking group and secondly, ve-hicle-supported camping, where camping equipment and supplies will be driven in on desig-nated access roads. Within the Wilderness Zone the "Leave No Trace" Principles of outdoor ethics will apply. These are:

1. Plan Ahead and Prepare
2. Travel and Camp on Durable Surfaces
3. Dispose of Waste Properly
4. Leave What You Find
5. Minimize Campfire Impacts
6. Respect Wildlife
7. Be Considerate of Other Visitors

In addition to the zonal prescriptions there are general park-wide tourism prescriptions that must be observed in all zones. These are outlined in the box below:

Park-wide Tourism Use & Impact Regulations

▶ Maximum of single axle 7-tonne vehicles for all access roads, unless otherwise stated
▶ Discourage use of deadwood for heating and cooking (specific guidelines under de-velopment by TATO)
▶ SENAPA management may at any time designate areas in any park zone that are off limits to tourists and tour operators for reasons such as:
  • Preventing disturbance for breeding or reintroduced animals, e.g. rhinos
  • Allowing recovery of vegetation
  • Minimising security risks, e.g. in park border areas neighbouring hunting zones
▶ SENAPA management will make every effort where practical to give sufficient notice to tour operators of the designation of such off-limits areas, together with a clear de-scription of the location and extent of such areas, and the expected time that the area will remain off limits
▶ No vehicle access is permitted in a 2km exclusion strip adjacent to all of SENAPA's boundaries. In addition, the Park boundary may only be crossed at designated Park Entry Points.

It will be necessary to make sure that all users of SENAPA are fully aware of the zonal and park-wide prescriptions, so as to ensure that there are no excuses for non-compliance. Un-der this management action, efforts will focus on ensuring that all park staff, tour operators and drivers are made aware of the zone boundaries, and the implications for their day-to-day activities and operations. SENAPA management will collaborate with tour operators in train-ing guides and drivers in the Zoning Scheme. This training will initially focus on the Wilder-ness Zone, which is the most innovative of the zones and requires high-levels of specialist skills from the approved tour operators in the zone. Other areas of training that will be con-sidered will be off-road driver training in the Low Use Zone. The wider distribution of informa-tion explaining the Zoning Scheme and tourism prescriptions will be implemented under Ac-tion 1.1.3.

Action 1.1.2: Implement a code of conduct for tour operators and visitors

It is vital that visitors are made aware of the park rules and regulations, and that they actively support and encourage their tour guides and drivers to follow them and *vice versa*. However,

a long list of rules and regulations is often intimidating and difficult for visitors to internalise during the short period of time that they spend in the Park. Therefore, a basic Code of Conduct for the Serengeti has been established (see box over page), which encapsulates the park regulations through a few general behavioural characteristics expected of visitors. Following these few simple behavioural characteristics should naturally lead to compliance with the park regulations.

As with the Zoning Scheme and prescriptions outlined in Action 1.1.1, it will be necessary to ensure that all park users are made aware of the Code of Conduct. This management action will concentrate on making sure that park staff, tour operators and drivers understand the Code of Conduct, the underlying park rules and regulations, and the requirement that they set an example to visitors. Action 1.1.3 outlines steps to ensure the dissemination of information explaining the Code of Conduct, alongside raising awareness about the SENAPA Zoning Scheme.

Action 1.1.3: Produce and widely disseminate information explaining the Zoning Scheme and Code of Conduct to park users

Visitors will only follow the Zoning Scheme's tourism prescriptions and Code of Conduct if they are made aware of them. This management action will make sure all park visitors are aware of these guidelines, through producing and distributing simple and understandable information materials, which includes a SENAPA map and summarises and explains the Zoning Scheme tourism prescriptions and the Code of Conduct. These materials will include posters that will be displayed at Park gates, accommodation facilities and other strategic and visible places. Leaflets will also be produced for distribution by tour operators/ concessionaires to their clients as well as by SENAPA staff at entrance gates. These leaflets will contain a map of SENAPA.

Target 1.2: Tourism access and use diversified in appropriate ways, in order to expand SENAPA tourism attractions and minimise over-use of existing attractions

As stated under Target 1.1, much of the visitor activity occurring in the Park is centred on the Seronera Valley and a few other key areas where the main attractions and facilities are located. As a consequence, these popular areas are suffering negative environmental impacts from overuse. Target 1.1 will address this problem through restricting and setting limits to visitor activities and use. This management target will diversify tourist activities away from the high use areas. This will firstly reduce pressure on the High Use Zone, and secondly, provide an improved and more diverse visitor experience covering more of the Park.

Figure D.2 below (under Objective 4), shows a continuing upward trend in visitor numbers to the Serengeti in the past eight years. The marked increase in projected numbers for 2004/5 indicates that this upward trend is unlikely to slow down in the short term. In response, the dispersal of visitors to other areas of the Park is required, through providing amenities such as visitor centres; balloon operations; off-road driving; non-vehicle-based activities, such as walking safaris; and an improved and expanded game-viewing road network.

The full range of permissible tourist activities by zone that will be offered within the Serengeti during the implementation of this GMP are listed for Target 1.1 in Table D.1 above. The following management actions have been formulated to meet Management Target 1.2:

The Serengeti Code of Conduct

Welcome to the Serengeti - the setting for one of the world's last remaining large mammal migration spectacles, and to the predators that depend on it. Your support through your park entrance fees is helping us to protect this global heritage, but you can help us still further by observing a few simple rules that will also make your own visit and those of others more enjoyable and safe:

▶ *Please don't disturb!*
Many wild animals become distressed when surrounded by vehicles or when vehicles come too close to them. Please keep noise to a minimum and never try to attract animals' attention, especially at sightings. Remember, all wild animals have right of way. If your driver approaches a dangerous animal closer than five metres, or if the animal moves towards you, please ask the driver to move away. If there are already several vehicles at a sighting, it's probably best to ask your driver to go elsewhere, unless you enjoy traffic jams. Remember, the Serengeti is at its best when you are alone, and there is much else to see!

▶ *Do not feed!*
Feeding wild animals can upset their diet and lead to an unnatural dependence upon people.

▶ *Drive carefully!*
Please observe the 50 km/h speed limit and, except in designated off-road driving areas, keep to the established roads to minimise damage to grass and woodland habitats. Night driving is not allowed.

▶ *Don't be a road hog!*
When viewing wildlife keep to the roads, but allow space for other vehicles to pass. When approaching other vehicles at a sighting, slow down and pass slowly or wait until they move on. Avoid driving between other visitors and the sighting if possible. Do not use mobile phones in the Park outside of accommodation facilities. Do not use radio call in the vehicle during the game drive.

▶ *… Or a litter bug!*
Litter and garbage can be extremely harmful to wild animals. Please dispose of rubbish at your accommodation or at designated SENAPA collection points.

▶ *Take care with fire!*
Please be very careful with cigarettes and matches, as accidentally started bush fires are a major threat to the Serengeti. No campfires are permitted away from authorised campsites.

▶ *Be safe!*
Unless you are at a designated picnic site or other visitor attraction, stay in your car whenever possible, and never move more than 10 metres from your car, especially when large animals are nearby. Objects such as animal skulls may carry diseases dangerous to people, so please leave them where they are.

Thanks for your contribution to the protection of the Serengeti. With your help, the wildlife and habitats will still be here when your grand children come to visit us!

The Management of Serengeti National Park

Action 1.2.1: Identify and establish a broad spread of tourism sinks in the High and Low Use Zones

This GMP defines *tourism sinks* as designated areas where visitors can get out of their vehicles to undertake a specific activity. The aim of these tourism sinks is firstly, to get vehicles off the roads so as to reduce the congestion and impact of vehicles within the Park, and secondly, to increase the length of time visitors stay in the Serengeti and their level of satisfaction. Tourism sinks will be distributed evenly around the High and Low Use Zones and will provide minimal facilities. The development of these sites will be based on a survey that will recommend an appropriate choice of activities and sites to be developed.

Types of tourism sinks to be developed will include picnic sites, short walks on designated trails (e.g. along Grumeti River), cultural sites (e.g. Fort Ikoma and Loiyangalani, near Sopa Lodge), and water-bird viewing points. Lodges and other accommodation facilities in these zones will also be encouraged to develop their own tourism sinks within their concession areas.

Many tourism sinks will not need to be booked and will charge no fee for their use. These tourism sinks will be especially attractive to the budget tour operators, where there is a need to keep the distance travelled to a minimum. However, certain tourism sinks will have special development and administration needs, such as a potential aerial walkway along the Grumeti River. These special tourism sinks will have a fee associated with them.

Action 1.2.2: Develop overnight walking safaris in the Wilderness Zone, according to the Limits of Acceptable Use

Walking safaris are a new product in Tanzania and are in high demand by the tourism industry. Since 1997, TANAPA has been exploring the potential for walking safaris in national parks. The draft "**TANAPA Walking Safari Guidelines**" are presently under review, based on the experiences of a pilot scheme in Tarangire National Park.

The Limits of Acceptable Use for Walking Safaris in the Wilderness Zone are provided in Table D.2 below, but it is important to note that they are subject to the TANAPA Walking Safari Guidelines and the collection of additional information, which may result in modifications.

Table D.2: Wilderness Zone LAU: walking safaris

Operational Parameters	Limits
Maximum number of nights at any one campsite location	4 nights
Minimum length of walking safari	2 paying days
Maximum number of clients per group	8
Maximum number of groups per walking safari block	1

In order to develop walking safaris within the Wilderness Zone, it is proposed that an initial pilot scheme is tested. This pilot scheme will have specific walking safari blocks containing between two and four campsite locations. These campsite locations will be situated in such a way that groups will be able to walk in a day from one to the next. In addition, these locations will cover a relatively large area, within which the walking group will be able to select where to set up their camp. The task of identifying a workable network of campsite locations will involve the specialist knowledge of TANAPA, Tour Operators and the SENAPA Resource Protection Department. The walking safari blocks will be booked for the exclusive use of one walking safari group at any one time. The group can spend a maximum number of nights equivalent to twice the number of campsite locations in the block. Therefore if there are four campsite locations in a block, then the group can spend a maximum of eight nights. Finally, it

is possible for a walking safari group to book adjacent blocks, so as increase the length of their safari.

If the pilot scheme generates greater demand than capacity, then the Tourism Department will look into the re-design of the walking safari system, so as to allow more than one walking group per block. In this scenario, walking groups will move along a linear route, starting and finishing at the same specified points. Therefore, rather than have a maximum of one group per block, there will be a maximum of one group per campsite location.

Before authorised Walking Safari Operators can commence operations, a booking system will be put in place, as developed by Action 4.1.4 below.

Action 1.2.3: Develop short interpretive trail walks from designated points, as appropriate

Short interpretive trail walks will typically be only a few kilometres in length, which with a well-trained guide will take several hours to complete. In the High Use Zone, these trail walks will typically be up to one hour in duration, whereas in the Low Use Zone these walks may extend up to four hours. The walks will originate from accommodation facilities or other SENAPA designated areas, according to the recommendations made in the survey for tourism sinks (see Action 1.2.1). Concession-holders with walks originating from their accommodations facilities will bear the costs and responsibility for their operation; although a TANAPA armed ranger will be required to accompany all walks. Interpretive walks originating from other designated sites will be the responsibility of SENAPA management.

TANAPA Walking Safari Guidelines will define the operating parameters and booking system for these short interpretive walks. Currently, the guidelines state that short trail walks of not more than one hour will be available on a first-come, first-served booking basis; while longer trail walks will require a one-month advance booking.

Action 1.2.4: Designate a new ballooning concession in the Western Corridor

Contrary to initial expectations, it appears that wildlife is little disturbed by balloon operations. One company, African Balloon Safaris, has run ballooning in the Serengeti since 1989. Up to two balloons are flown daily along one of two flight paths in the Seronera Valley. This GMP has approved the expansion of balloon operations in the west of the Park (around Kirawira). SENAPA management will tender the opportunity for a second ballooning concession, with preference being given to bids that locate their support facilities outside of the Park and that minimise environmental impacts in the Park.

Action 1.2.5: Implement off-road driving pilot scheme in Low Use Zone

The final management action for this management target will initiate the designation of off-road driving for specific seasons in the Low Use Zone on a pilot basis. The scheme, subject to TANAPA approval, will be based on the experiences and lessons learnt from other protected areas, as well as a document prepared by TATO, which will present the problems and issues for off-road driving in SENAPA and propose an environmentally-sustainable option for its introduction and policing. As off-road driving has not been formerly implemented in the Serengeti before, SENAPA management will closely monitor the impact and respond according to the findings. The monitoring will seek to understand the impact of off-road driving on the vegetation recovery rates and ground fauna (e.g. nesting birds, tortoises, etc.). Subject to this ongoing monitoring, SENAPA management will reassess the suitability of off-road driving within SENAPA.

Objective 2: SENAPA visitor facilities improved in order to provide an optimal tourism experience with minimal environmental impact

The future desired state of SENAPA is one where the visitor facilities are in keeping with zonal prescriptions, meet the expectations and requirements of visitors, and do not negatively impact on the ecological or visual integrity of the Park. The two management targets to achieve this objective will firstly improve and expand the park facilities, and secondly, develop procedures to ensure that the tourism facilities of concession holders and tour operators comply with TANAPA environmental standards.

Target 2.1: Visitor facilities improved and expanded in close consultation and collaboration with the tourism industry, especially those catering for local tourists and alternative tourism activities

Within SENAPA there is a diverse array of visitor accommodation, including lodges, permanent and non-permanent tented camps, and public campsites (see Annex 3: for descriptions of accommodation types). However, a key deficiency is that there is currently inadequate accommodation for local visitors, many of whom are operating on a tighter budget than international visitors. There are presently three rest houses with a capacity of 17 beds and a youth hostel with 87 beds. The Park receives an average of 700 local visitors per year, a fraction of the number of international visitors. Provision of accommodation appropriate to the needs and budget of local visitors will be an important first step in encouraging more Tanzanians to visit the Serengeti and fulfilling the SENAPA Tourism Strategy principle of promoting domestic tourism.

There are still areas of the Park, located in the Low Use Zone, where there is limited or no accommodation. These areas have been identified as being ideally suited for the development of Special Campsites, which are managed by SENAPA but are booked, equipped and occupied on a seasonal basis by tour operators.

SENAPA management is presently experiencing problems with water supplied to Seronera via a pipeline built in the early 1970's from the Bologonja Springs in the northern extremity of the Park. The condition of the pipeline has deteriorated such that water availability is sporadic and a continual problem for the Seronera staff village, park offices and other facilities that depend on the pipeline for their water. These water supply problems have led to difficulties with the management of the Park's six public campsites, resulting in two being closed down. The facilities at the remaining campsites are overused and do not meet visitor expectations. The most serious issues being the use of pit latrines and inadequate water supplies. Table D.3 below gives details of the public campsites and the major problems that they face.

Table D.3: Public campsite facilities and issues

Name	Area	Facilities	Needs/remarks
Dikdik	Seronera	Pit latrines Kitchen 5 Picnic shades Dining hut Water tank (5000 l)	Flushing toilet required Additional 2 water tanks (for bathroom and reserve) Dining hut renovation
Pimbi	Seronera	Pit latrines Kitchen Dining hut Bathrooms 5 Picnic shades	Flushing toilet required Additional 2 water tanks Dining hut renovation

Name	Area	Facilities	Needs/remarks
		Water tank (5000 l)	
Nyani	Seronera	3 Pit latrines 2 Bathrooms Kitchen, 2 dining huts 2 Water tanks (5000 l each)	Flushing toilet required Additional 1 water tank Dining hut renovation
Ngiri	Seronera	3 Pit latrines 4 Picnic shades Kitchen, Dining hut Water tank (5000 l)	Flushing toilet required Additional 2 water tanks Dining hut renovation
Tumbili	Seronera	4 Pit latrines	Flushing toilet required Additional 2 water tanks Dining hut renovation
Lobo	Lobo	Pit latrine	Flushing toilet required Water tank (5000 l) Kitchen, Dining hut Picnic shades

In addition, although some Park Gates have adequate facilities and are in a good state of repair, others, particularly Ndabaka and Ikoma, require upgrading, as shown in Table D.4 below.

Table D.4: Park Gates facilities and issues

Place	Facilities	Condition	Needs/remarks
Naabi	Entrance gate, toilets (pit), nature trail, display in entrance gate, staff houses	Good	Nature trail needs improvement and better visitor interpretative material and information
Ikoma	Gatehouse, toilet (pit)	Average	Needs improvement for toilet and gatehouse, information/display
Handajega	Gatehouse, toilet (pit)	Good	Information/display
Ndabaka	Gatehouse, toilet (pit)	Average	Needs improvement for toilet and gatehouse, information/display
Kleins	Gatehouse, toilet (flush)	Gate good and current toilet improvements	Information/display
Lobo	Office	Good	Information/display
Seronera SVC	Visitor centre, toilets (flush), audio-visual room, shop, internet access	Generally good	Power issue. Projector for presentations
Ndutu	Office (shared with NCA), toilet (pit)	Average	NCA responsible for office. Information/display/toilet improvement/ office maintenance
Bologonja	Gatehouse, toilet (flush)	Average	Information/display
Grumeti	Airstrip only, toilet (pit)		Office, toilet improvement, information

The following management actions address the issues described for this management target and relate to the facilities that SENAPA management has responsibility for.

Action 2.1.1: Upgrade existing park infrastructure, in particular regarding water supply and sanitation

Currently, existing Park tourism and staff facilities are basic, and many are in a poor state of repair. This management action will identify the existing SENAPA infrastructure that requires upgrading to meet the TANAPA standards and visitor expectations. Based on a provisional assessment and in collaboration with the Park Operations Programme (Target 3.2), this will involve repairing the pipeline to Seronera, improving the toilet facilities at the Seronera Visitor Centre and upgrading the existing public campsites and Park Gates, as identified in Table

D.3 and Table D.4 above. The needed systems for auditing water and fuelwood supply and usage will also be developed under this action (see also Action 2.2.2).

Action 2.1.2: Implement Limits of Acceptable Use for accommodation in the High and Low Use Zones

The Limits of Acceptable Use (LAU) for accommodation in this GMP define the future desired conditions as regards facility development rather than the maximum amount of use and development the Park can tolerate. Table D.5 below defines the LAU for accommodation in the High and Low Use Zones.

High Use Zone LAU

For the High Use Zone, the LAU for accommodation are set for the existing and proposed bed capacities, with only a small increase on the existing bed capacities permitted. However, if subsequent Action Plans under this GMP develop sufficient SENAPA facilities, i.e. roads and tourism sinks, then there may be limited scope for adding some additional bed capacity at existing concessions within the Zone. In addition, the option of converting some regular Special Campsites to other type of Special Campsites will be considered (see Action 4.1.4), but this will not affect the overall bed capacity for the zone.

Low Use Zone LAU

For the Low Use Zone, the LAU for accommodation is also set for the existing and proposed bed capacities, as listed in Table D.5 below. There is still potential to increase the bed capacity within areas of this zone, whilst still maintaining the low use characteristics. Permanent Tented Camps are proposed in the northern Low Use block around Wogakuria as well as south of the Grumeti River at Musabi. New Special Campsites are proposed in more remote areas of this zone. The proposal for introducing a new category of Premium Campsites is addressed under Action 4.1.4.

Action 2.1.3: Sensitise and encourage private tour operators and investors to provide accommodation to Tanzanian citizens at affordable rates

During the period of this GMP, SENAPA will encourage and support private sector investors and tour operators to develop ways to make visiting the Park by Tanzanian citizens affordable and in line with the SENAPA Tourism Programme Strategy of promoting domestic tourism. This may involve tour operators providing accommodation at certain times of the year at reduced and affordable rates for local citizens.

Action 2.1.4: Implement revised system for Special Campsite management

The current environmental condition of many of the Special Campsites is unsatisfactory, with many groups leaving their rubbish and not maintaining the hygiene or sanitation of the sites. To establish and maintain high environmental standards, SENAPA management will regularly check and review the Special Campsites. If environmental standards are not maintained, SENAPA will take appropriate action. Management responses that will be considered for implementation by this GMP will include on-the-spot fining for offending operators and the closing of Special Campsites that require rehabilitation.

Action 2.1.5: Review existing concession arrangements

At present it is felt that the existing concession arrangements do not contribute sufficiently to SENAPA. Currently, it is estimated that concessions throughout SENAPA contribute only about 3% to SENAPA overall income. This is an issue that will be reviewed as part of the

wider TANAPA corporate review of park and concession fees.

Table D.5: Limits of Acceptable Use for accommodation

Zone / Facility	High Use Zone			Low Use Zone		
	Name	**Existing Beds**	**Proposed Beds**	**Name**	**Existing Beds**	**Proposed Beds**
Lodge	Seronera Wildlife Lodge	150	150	Not permitted	0	0
	Sopa Lodge	160	160			
	Serena	144	144			
	Lobo Wildlife Lodge	150	150			
	Huka Lodge*	80	80			
	Lodge sub-total	**684**	**684**			
Permanent Tented Camps	Grumeti River Camp	20	20	Kusini Camp	40	40
	Serena Kirawira	50	50	Mbuzi Mawe	30	30
	Migration Camp	42	42	Mbalageti	50	50
				Musabi Hills		30
				Wogakuria 1(Former K&D Camp)		30
				Wogakuria 2 (Near Mara River)		30
				Wogakuria 3 (West of Wogakuria 1)		30
	Permanent Tented Camps sub-total	**112**	**112**	**Permanent Tented Camps sub-total**	**120**	**240**
Premium Campsites	**Moru**			**Kogatende**		
	Moru Premium 1 (Itonjo Special)		12	Makutano Premium		12
	Moru Premium 2 (Nyaruboro Special)		12	**Kuka Bologonja**		
	Moru Premium 3 (Moru 7b)		12	Nyamalumbwa Premium 1		12
	Moru Premium (Moru 7a)		12	Nyamalumbwa Premium 2		12
	Moru Premium 5 (Moru 9)		12			
	Moru Premium 6 (Moru 8)		12			
	Simuyu					
	Simiyu Premium		12			
	Premium Campsites sub-total	**0**	**84**	**Premium Campsites sub-total**	**0**	**36**

Zone / Facility	High Use Zone			Low Use Zone		
	Name	**Existing Beds**	**Proposed Beds**	**Name**	**Existing Beds**	**Proposed Beds**
Special Campsites	**Western Corridor**			**Kogatende North**		
	Kirawira Special 1	16	12	Wogakuria Special 4		12
	Kirawira Special 2	16	12	Wogakuria Special 5		12
	Mbalageti Special		12	Wogakuria Special 6		12
	Kirawira Hills Special		12	Wogakuria Special 7		12
	Hembe			Wogakuria Special 8		12
	Hembe Special	16	12	Wogakuria Special 9 (Mwambani Special)	16	12
	Musabi			Wogakuria Special 10 (Kanga Special)	16	12
	Musabi Special	16	12	**Kogatende South**		
	Mareo			Raramangi Special 1		12
	Mareo Special	16	12	Sonzo Special 1		12
	Kirawira Hills			**Togoro plains**		
	Kirawira Hills Special		12	Togoro Plains Special 1 (Pofu Special)	16	12
	Seronera East			Togoro Plains Special 2 (Kori Special)	16	12
	Turner Special 1 (Turner Special A)	16	12	Togoro Plains Special 3 (Nyebeho Special)	16	12
	Turner Special 2 (Turner Special B)	16	12	**Bologonja**		
	Turner Special 3 (Turner Special C)	16	12	Bologonja Special 1	16	
	Engarananyuki Special 1		12	Bologonja Special 2	16	
	Engarananyuki Special 2		12	**Ndutu**		
	Seronera Central			Ndutu Special 1 (Nungunungu Special)	16	12
	Seronera Special 1 (Sero special 9)	16	12	Ndutu Special 2 (Tandawala Special)	16	12
	Seronera Special 2 (Sero Special 11)	16	12	Ndutu Special 3 (Millennium Special)	16	12
	Seronera Special 3 (Sero Special 12)	16	12	Ndutu Special 4 (Nyumbu Special)	16	12
	Seronera Special 4 (Acacia Special)	16	12	Ndutu Special 5 (Kakakuona Special)	16	12
	Seronera Special 5 (Yellow Stone Special)	16	12	**Southern**		
	Seronera Special 6 (Kubukubu Special)	16	12	Kusini Special 1		12

Zone / Facility	High Use Zone			Low Use Zone		
	Name	**Existing Beds**	**Proposed Beds**	**Name**	**Existing Beds**	**Proposed Beds**
	Lobo			Kusini Special 2		12
	Lobo Special 1	16	12	**Western Corridor**		
	Lobo Special 2	16	12	Simiti Special	16	12
	Lobo Special 3		12	Belabela Special	16	12
	Ndasiata Special 1		12	Grumeti River Special		12
	Ndasiata Special 2		12	Handajega Special	16	12
	Naabi			Nyasirori Special	16	12
	Naabi Special 1 (Naabi Extra)	16	12			
	Naab1 Special 2 (Naabi Special 1)	16	12			
	Naabi Special 3 (Naabi Special 2)	16	12			
	Rongai & Makoma					
	Rongai Special 1	16	12			
	Rongai Special 2	16	12			
	Rongai Special 3	16	12			
	Rongai Special 4 (Elmakati Special)	16	12			
	Rongai Special 5 (Prince Special)	16	12			
	Makoma Special	16	12			
	Moru					
	Olbayee Special 1	16	12			
	Olbayee Special 2	16	12			
	Special Campsites sub-total	*416*	*420*	*Special Campsites sub-total*	*256*	*288*
Public Campsites	**Seronera**			**Ndabaka**		
	Seronera Public 1 (Dikdik & Pimbi Public)	60	25	Ndabaka Public	30	20
	Seronera Public 2 (Tumbili Public)	60	25	**Ikoma Gate**		
	Seronera Public 3 (Nyani Public)	30	25	Ikoma Public 1		10

Zone / Facility	High Use Zone			Low Use Zone		
	Name	**Existing Beds**	**Proposed Beds**	**Name**	**Existing Beds**	**Proposed Beds**
	Seronera Public 4 (Ngiri Public)	30	25			
	Lobo					
	Lobo Public 1	20	20			
	Kirawira					
	Kirawira Public 1		20			
	Public Campsites sub-total	*200*	*140*	*Public Campsites sub-total*	*30*	*30*
Hostels & Rest Houses	Seronera Youth Hostel	87	87			
	Rest Houses (Seronera & Kirawira)	17	17			
	Hostels & Rest Houses sub-total	*104*	*104*			
Maximum total beds		**1516**	**1544**		**406**	**594**

* The site was allocated to Huka Lodges but the facility has not been developed.

Target 2.2: Systems for monitoring and regulating the environmental impacts of tourism facilities designed and established

Waste management systems throughout the Park are generally poor, with the exception of some hotels such as the Serena installations. Systems for monitoring and regulating the environmental impact of tourist facilities are essential to ensure that the development of tourist facilities at SENAPA are in alignment with the SENAPA Tourism Programme Strategy and have minimal impact on the Park's environment. In order to meet this target, the following management actions have been formulated and are described below.

Action 2.2.1: Ensure implementation of DALP environmental impact guidelines for all new facilities

For the development of the proposed new facilities (as listed in 0 under Action 2.1.2), a basic requirement will be that they conform to TANAPA's Development-Action-Lease Procedure (DALP). This will involve incorporating and satisfactorily meeting the DALP's criteria for site selection, proposal preparation and environmental impact.

Action 2.2.2: Establish environmental impact standards (including waste, water and fuelwood management) for SENAPA tourism facilities and a system of incentives and penalties to ensure compliance

Under this GMP, all tourism facilities will be asked to meet set environmental impact standards. Appropriate standards will be set for lodges, permanent tented camps and Special Campsites. These standards will include the requirement to monitor and efficiently manage the disposal of waste and the use of water and fuelwood. The standards, and penalties for non-compliance, will be incorporated into the reviewed concession agreements (see Action 2.1.5). This system will require that concessionaires consistently meet these standards and demonstrate that they are improving their environmental performance on a regular basis, and in line with TANAPA and national EIA guidelines. Assessment of performance will be done by concessionaires themselves using self-evaluation score-sheets, and periodically verified externally.

Action 2.2.3: Advocate for restrictions on aircraft noise pollution over SENAPA that severely impacts on the wilderness values of the Park

At present most commercial air traffic flies into and out of the Serengeti between mid-morning and mid-afternoon. This has had the advantage of concentrating air traffic noise away from the important game viewing periods around dawn and dusk. As commercial planes are not stationed within the Park, this situation has arisen by default rather than design. However, visitor numbers are increasing and new developments/ airstrips are being proposed based on merit within the broader Serengeti ecosystem, which will increase aircraft traffic and noise pollution. To address this threat to the wilderness values of the Park, SENAPA will work with TANAPA HQ to advocate for restrictions to, and controls on, these developments to minimise environmental impacts and impaired visitor experience within SENAPA.

Objective 3: SENAPA interpretive centres and materials are of high quality, relevant, informative and educational

The desired future state of SENAPA is one where visitors can easily access relevant, high quality information that will enhance their understanding and appreciation of the Park's exceptional resources, while providing clear guidelines on the proper use and behaviour in rela-

tion to these resources. Visitors and readers of this information will be stimulated to develop an interest in and support for the importance of SENAPA and of conservation issues in general. The two management targets to achieve this desired state will firstly improve and expand upon the SENAPA visitor interpretation facilities and secondly, improve the information material available, as described below.

Target 3.1: An improved and expanded network of SENAPA visitor interpretation facilities developed

The Seronera Visitor Centre is a popular point of call for many park visitors. Although use of the centre by visitors varies seasonally, there were an average of 80 visitors a day in 2002-3 compared with 74 per day the previous year. The large majority of comments left in the Centre's visitors' book are very complimentary; however, facilities, such as the shops and toilets, need to be improved and upgraded. Apart from the Seronera Visitor Centre there are no SENAPA interpretation facilities at present. The development of such facilities will be the focus for the management actions described below.

Action 3.1.1: Develop interpretation facilities at Ndabaka, Naabi and Handajega in line with the existing Visitor Interpretation Plan, and available funding

This GMP has identified the need to develop alternative interpretation facilities to the Seronera Visitor Centre in order to encourage the dispersal of visitors away from the Seronera Valley (see Target 1.2). In line with the SENAPA Visitor Interpretation Plan and based on an initial assessment of locations, the proposed sites for developing these facilities are in the western sector at Ndabaka, in the southern sector at Naabi, and finally in the northern sector at Handajega.

Action 3.1.2: Develop mini-interpretation sites and high quality interpretation leaflets at selected tourism sinks

In support of the development of tourism sinks, this management action will study all the tourism sinks being proposed under Target 2.1 and will develop interpretive information that explains the key features and importance of these sites. This interpretive information will be written up in leaflets and disseminated at park gates and at accommodation facilities and, if practical, at the tourism sink itself.

Action 3.1.3: Develop information displays/ leaflets at SENAPA lodges, Park Gates and research centres

This management action will strive to ensure that visitors are aware of the opportunities available within the Park and of the ground-breaking and management-relevant research that is being conducted. Information displays identifying the visitor opportunities, such as tourism sinks, will be displayed at points where visitors will stop (e.g. Park Gates, Lodges). SENAPA management will cooperate with SWRI in the production of suitable information displays/ leaflets concerning ongoing research projects within the Serengeti, which will be located at their research centres. All information displays/ leaflets will be constantly updated as and when new information is available.

Action 3.1.4: Provide appropriate short-course training to strengthen interpretational capacity of assistant tourism officers

It is intended that Assistant Tourism Officers staff all visitor interpretation facilities. These officers are responsible for explaining the interpretive information at the facilities, as well as for

going out with visitors into the Park. This management action is focused at strengthening the interpretational capacity of these officers through short-course training.

Target 3.2: Supply of visitor information materials improved

Currently there is a lack of interpretative information available for SENAPA visitors. Two shops are presently operated at SENAPA facilities - at the Seronera Visitor Centre and at Naabi Gate. However, there is a recognised need to improve the quality and range of books, maps, videos and other interpretative information at these outlets. Information on potential visitor attractions, both cultural, historical, such as Fort Ikoma and Kilimafedha Gold Mine, as well as natural resources such as river and kopje systems, is not currently available. Providing up-to-date materials on these attractions (i.e. tourist maps, brochures and walking guides) and making them widely available at strategic locations, such as at park entrance gates, will be an important aspect of efforts to diversify and disperse tourism opportunities in the Serengeti (see Target 1.2). In order to ensure the availability of information to visitors is improved and of a high quality, the following management actions have been developed:

Action 3.2.1: Work with TANAPA Desk Top Publishing Unit and technical advisors to develop a standard branding for SENAPA information and interpretation materials and signs

In order to present a professional image, it is important that SENAPA publicity and information is carefully planned and designed to convey the park image and reflect the character of the Park. This branding will be adopted consistently for all SENAPA publications, displays and signs, and will be in line with the broader TANAPA branding. To achieve this, SENAPA will work with the TANAPA Desk Top Publishing Unit to agree the brand design and prepare and print appropriate materials. The production of certain materials (such as guidebooks and maps) that are unsuitable for in-house production will be outsourced. In addition, the road signs at all major road junctions will be updated with this new branding, which will also provide an opportunity to incorporate directions to new visitor attractions and facilities.

Action 3.2.2: Design essential and simple information materials describing key park attractions suitable for free distribution to all visitors

The aim of this management action will be to provide all SENAPA users with easy access to the information they need, in order to have a safe and enjoyable park experience. This will involve producing and disseminating information on the key park attractions, with an accurate map, as well as incorporating a summary of the relevant Zoning Scheme tourism prescriptions and Code of Conduct (see Action 1.1.3). This information will be distributed freely in the form of brochures and leaflets.

Action 3.2.3: Ensure the wider dissemination of information about the Serengeti

The final management action for this Target will ensure that the information materials developed are made readily available to the general public. This will be achieved by ensuring that the full range of information materials is made available at outlets inside and outside of SENAPA. It is expected that these improved materials (along with other products attractive to visitors) will increase the retail and fund-raising potential of the SENAPA shop located at the Seronera Visitor Centre. In addition, the SENAPA website (www.serengeti.org) will be updated with these latest materials and certain documents will be made available for downloading. The dissemination of information will be linked to the increasing efforts by SENAPA to promote and market the Serengeti both nationally and internally.

Objective 4: Tourism management improved in collaboration with tourism industry partners

The future desired state of SENAPA is one where tourism is effectively managed, in close collaboration with the tourism industry, to provide an outstanding visitor experience. Supporting and informing management actions are administrative systems that effectively coordinate bookings, collect revenue, and monitor environmental impacts of tourism use. This desired future state will be achieved through the following two management targets that firstly, address issues of management systems and secondly, the communication and cooperation with tourism industry partners.

Target 4.1: SENAPA tourism administrative and information systems enhanced in order to provide park managers with timely and accurate information on visitor numbers, tourism impacts, and revenue generation

Figure D.2 below shows the total SENAPA visitor numbers (resident and non-resident) and revenues for the years 1994-5 to 2003-4[4], with a projected estimate made for 2004-5 that is based on the first seven months of the financial year. Over this period there has been a gradual increase in total tourism numbers and revenues.

Figure D.2: SENAPA visitor numbers and revenue trends

Fiscal Year
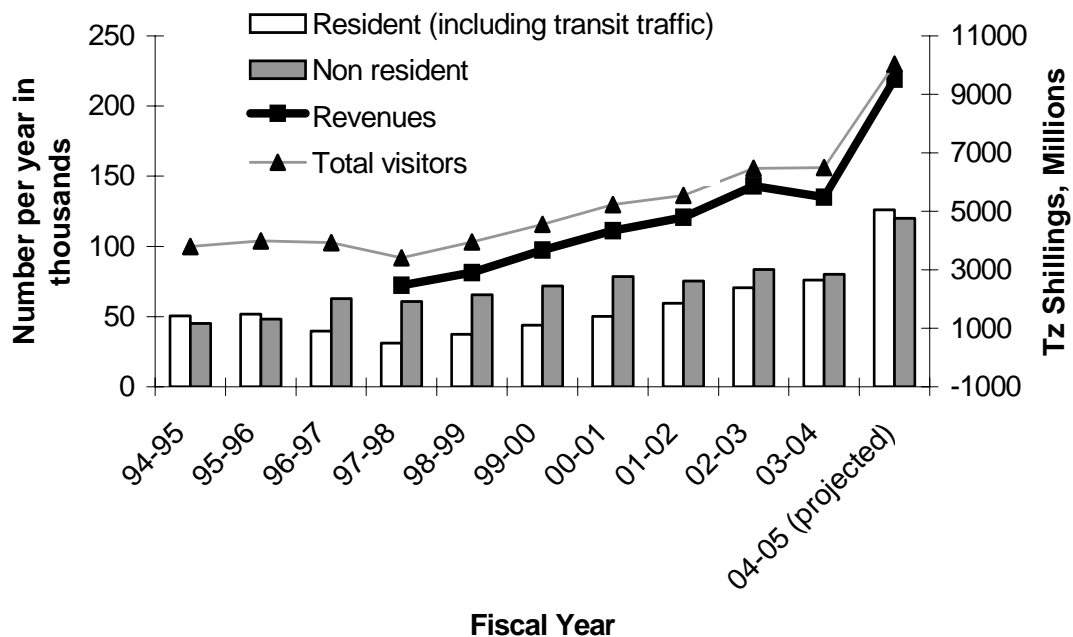
To manage this growing influx of tourists, the SENAPA Tourism Department currently has a staff of 27 led by a warden-in-charge (see Table D.6 below). Patrols are conducted daily to check the state of public and special campsites when in use. Gate conditions are checked in cooperation with the respective zonal warden. At the public campsites, cleanliness and the

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[4] Resident data include a large number of Tanzanians that are in transit through the park. The total number of Tanzanians actually visiting the park is very small at about 700 per annum. However, a total of 2,713 students visited the park in 2002-2003, with peak visitations in September and March.

state of facilities/water availability is checked, as are visitor permits and visitor compliance with park regulations. Where resources allow, patrols of the visitor road circuits are conducted in the most heavily used areas.

Table D.6: SENAPA tourism management staff

Position	Number	Location	Qualifications
Wardens	3	2 Seronera (SRA), 1 Naabi	1x BSc. Wildlife Management 2x Dip. Wildlife Management Mweka
Serengeti Visitor Centre (SVC) Manager	1	SRA	Dip Wildlife Management, Dip Marketing
Tourism Assistants	7	SRA	Form 4 leavers, 1 trilingual (Spanish, French, German)
Conservation Education Officer	1	SRA	
Tourism Attendants	10	3 SRA rest houses 1 SRA staff camp 5 SVC and campsites 1 Naabi	
Drivers	3	2 SRA, 1 Naabi	

An analysis of visitor offences over three financial years 1999-2002, see Table D.7 below, shows that off-road driving is the most common offence, followed by camping without paying and entering the Park without paying. However, given that about 200,000 visitors visit the Park every year, the number of offences occurring, or those being detected, is very low. The average fine is approximately Tshs 12,000, which is also very low and is an issue examined under the Park Operations Programme (see Park Ops Action 2.5.4). Another issue is that on-the-spot fines presently made by park staff are not always properly recorded or receipted.

Table D.7: The nature and relative frequency of visitor offences occurring in the Serengeti National Park 1999 – 2002

Offence	No.	%
Off road driving	35	26.3
Camping w/o paying	27	20.3
Entering Park w/o paying	24	18
Speeding	17	12.8
Disturbing animals	12	9.0
Entering at Ndutu	11	8.3
Other	5	3.8
Night	2	1.5

Overall, SENAPA's capacity to manage tourism has not kept pace with the expansion of tourism and the rapid growth in visitor numbers in recent years, and needs to be strengthened, especially in the area of introduction of new technology for tourism management. In particular, new systems of collecting and analysing tourism statistics are needed, as a basis for adaptive management, as well as new secure and transparent systems for revenue collection and management. In order to achieve this target the following management actions have been developed:

Action 4.1.1: Develop computerised visitor management system

TANAPA is in the process of computerising its management systems, and so far this includes an approved computerised accounting system. SENAPA will adopt these new computerised systems as they are developed and approved by TANAPA. Within the period of this GMP, it is likely that management systems will be fully computerised on a wide area network, accompanied by the introduction of e-payments for park entrances. This action will be implemented in close collaboration with the Park Operations Programme (see Park Ops Target 2.5).

Action 4.1.2: Develop an anonymous incident report form for distribution at SENAPA gates

With increasing visitor numbers, it is increasingly difficult for SENAPA to monitor and enforce park rules and regulations. Therefore, during this GMP, other park users will be encouraged to report any offences that they observe. Simple anonymous incident report forms will be developed and distributed at SENAPA gates, which park users can fill out on the spot or post or email at a later date. The basic information solicited in the form will be the time, place and brief description of the particular offence and the offending vehicle registration number.

Action 4.1.3: Develop an enhanced spatial system for monitoring visitor use of park zones and key habitats, including seasonal data

Information concerning visitor use and satisfaction is essential if the SENAPA Tourism Department is to respond and adapt to changing circumstances and requirements. Simple ways of measuring visitor use and satisfaction will be developed at key sites. Visitor use will be measured by techniques including turnstiles (at interpretation facilities), vehicle counter strips and record keeping. Visitor satisfaction and feedback will be obtained through questionnaires (potentially electronically filled in at user-friendly touch screens as well as paper questionnaires at entrance gates). To ensure the full cross section of visitor satisfaction is captured, annual visitor surveys will be conducted using random sampling techniques. The data generated will be collected and analysed by the Tourism Department and fed back into management decision-making.

Action 4.1.4: Update and implement booking systems and fees for safari walking and Special Campsites and ensure compliance

As shown in Table D.7 above, about half of the visitor offences occurring in the Serengeti result from non-payment of camping and entrance fees. Ensuring the payment of entrance fees will be addressed under Action 4.1.1, with the improvement in SENAPA management systems. This management action will seek to update and implement effective booking systems and fee structures related to walking safaris and Special Campsites. According to national policy, TANAPA HQ will take responsibility for conducting and endorsing any revisions in fee structures, which will be subject to periodic review during the GMP.

As described under Action 1.2.2, walking safaris will be initiated in the Wilderness Zone. This new activity will subsequently require the establishment of a booking system and fee structure. The framework for this system will be the TANAPA Walking Safari Guidelines, currently under review. However, the details of how to operationalise this system will need to be worked out for the specific context of the Serengeti. After one-year of implementation, the activity will be evaluated and options for its further development will be considered.

The second area of focus will be a review by TANAPA HQ of the Special Campsite booking system, cancellation policy and fee structure. Currently, the booking system for Special

Campsites is open to abuse with some tour operators seasonally block-booking Special Campsites for occasional use, or "selling on" to third parties. To rectify this problem, the proposed revised system for Special and Premium Campsites has been developed, which will be further developed during the implementation of the GMP and reviewed by SENAPA management after a one-year period.

Special Campsites

For Special Campsites, the bookings will be limited to a *maximum* of four consecutive weeks, with no operator allowed to return to the specific site for 14 days. This will prevent block booking. There will be a minimum occupancy of four paying clients per day and bookings must be confirmed and paid for in advance. The specifics of this booking system will be further developed during the implementation of the GMP. Wherever appropriate, relevant booking and booking cancellation arrangements already in place for local lodges will be taken into account in designing the system.

Premium Campsites

For tour operators that require longer periods, a new category will be established of Premium Campsites to be designated in the Plains of the High and Low Use Zones (see 0 above), which may be booked for a season. A new tailor-made and transparent booking system and fee structure for this new category will be developed by TANAPA HQ and SENAPA in collaboration with TATO.

Target 4.2: Mechanisms developed for strengthening communication and cooperation between tourism industry partners and SENAPA management

The need to improve communication and cooperation between SENAPA managers and the tourism industry is a recognised by both sides. The lack of collaboration negatively affects the management of tourism, and ultimately the Park's Exceptional Resource Values. This includes a lack of any accreditation scheme for tourism drivers and guides, a lack of clear mechanisms for tour operators to report incidents and infringements to the park authorities, insufficient penalties for lawbreakers, and a lack of feedback from park managers to tour operators concerning infringements that have been reported. Putting in place mechanisms to build up communication, collaboration and trust between tour operators and park managers, and to ensure that day-to-day interactions between the two sides are effective and efficient, is clearly a top priority for this GMP, and is crucial to the fulfilment of the Park Purpose and to the long-term maintenance of SENAPA's Exceptional Resource Values. The follow management actions will seek to strengthen this cooperation.

Action 4.2.1: Establish park management and tourism operator communication mechanisms

Currently TATO has a sub-committee for national parks, which meets about three times a year to discuss issues arising from their operations in parks. However, there is no effective communication between park management and the tourism industry. The first step to improve this communication channel will be SENAPA's participation in TATO-TANAPA liaison meetings, as and when they are convened. Within the Park, SENAPA management will convene twice yearly meetings with the SENAPA concession holders, and a biannual Tour Drivers-Management Meeting. The purpose of these meetings will be to provide an opportunity for both sides to raise issues, pass on information (e.g. concerning infringements) and resolve conflicts. Minutes of these meetings will be distributed to SENAPA concessionaires and tour operators.

SENAPA will also collaborate with TATO in organising an annual Tour Operators Meeting in Arusha, which will be held before the start of the high season (i.e. in early December). In addition, the possibility of re-locating one of the Tour Driver-Management Meetings (mentioned above) to Arusha will be considered, so as to link it with the Tour Operators Meeting and provide a wider forum for involving tour drivers and management representatives from all the northern parks.

Action 4.2.2: Promote and provide inputs into the development of a national driver/ guide accreditation system

The accreditation of off-road drivers and guides (especially walking safari guides) is an important longer-term objective for SENAPA. However, an accreditation system is an issue that must be developed at the national level. To promote and support this process, SENAPA management will use the experience of their awareness-raising, training and monitoring of off-road driving and walking safaris to provide inputs into the development of a national driving and guide accreditation system.

Mitigation of environmental impacts of major Tourism Programme actions

This section evaluates the potential environmental impacts of the major Tourism Management Programme actions and identifies mitigating measures to reduce, eliminate or offset adverse affects, which will be incorporated into the implementation of the Action Plan. The major Programme actions included in this assessment were selected because they were either potentially controversial, represented a major capital expenditure, and/ or required significant expenditures of TANAPA funding/ staffing resources.

Table D.8 below highlights the environmental aspects that are likely to be negatively affected by the major actions of this Programme and the proposed mitigation measures and recommendations. It will be the responsibility of SENAPA management to ensure that the proposed measures are implemented.

Table D.8: Mitigation measures for major Tourism Programme actions

Major action	Potential negative impact	Mitigation measure
1.2: tourism access and use diversified in appropriate ways	Decline of visitor safety as a result of diversification of tourism activities into more remote areas	▶ Ensure guides and off-road drivers are appropriately trained and equipped (c.f. Action 4.2.2) ▶ Ensure in-Park communications are improved (c.f. Park Operations Programme Action 1.2.2) ▶ Strengthen surveillance patrols in insecure hotspots (c.f. Park Operations Programme Action 1.2.1) ▶ Ensure emergency evacuation procedures and protocol are in place

Major action	Potential negative impact	Mitigation measure
1.2.1: Identify and establish a broad spread of tourism sinks in the High and Low Use Zones	Pollution and waste at sites degrading Park's flora and wildlife habitat	▸ If toilet facilities are necessary they should be constructed at least 100m away from closest river system ▸ No litter disposal facilities will be established at tourism sinks, since this will inevitably create a waste management problem. Rather, visitors will be required to carry any trash with them (see Code of Conduct in section 1.1.2) ▸ Area site marking should be done in such a way that avoids cutting down trees
	Degradation of cultural or archaeological sites	▸ Only properly planned low impact non-permanent facilities should be permitted
1.2.2.5: Develop an infrastructure of dead-end short access roads into the Wilderness Zone for camping locations	Contamination of soils and river systems from oil and diesel spills during road construction or grading	▸ Oils should be properly stored and safely disposed of outside of the Park
1.2.5: Implement off-road driving pilot scheme in Low Use Zone	Vegetation recovery rates and ground fauna irreversibly damaged	▸ Driving should not be permitted in areas with sensitive species or habitats nor during wet conditions ▸ Disturbed areas will be temporarily closed for restoration ▸ If impacts become unavoidable and unacceptable, then management should prohibit off-road driving

2.1.1.1: Implement appropriate and cost effective water supply infrastructure developments	New water infrastructure will lead to unsustainable water use	▸ Install appropriate consumption measuring equipment and take regular recordings
		▸ Modify facilities and practices to reduce day to day consumption, e.g. use:
		  o Dual flush toilet cisterns
		  o Aerated shower nozzles
		  o Recycling where possible

	Pollution and degradation of water in the locality	▸ Consideration should be given to purification requirements, desalination and disinfections ▸ Regular samples should be tested at the storage facility and point of disposal

Major action	Potential negative impact	Mitigation measure
2.1.1.4: Implement new environmentally-friendly pit latrines for Seronera campsites		▸ Ensure a liquid waste management standard is in place and audit the implementation of this standard
3.1.1: Develop interpretation facilities at Ndabaka, Naabi and Handajega	The facilities detract from the wilderness character of the landscape	▸ Ensure the facilities are developed in a manner that reflects the natural character of the site in terms of scale and architectural shape and style
	Pollution and waste will be generated at facilities	▸ If toilet facilities are necessary they should be constructed at least 100m away from closest river system ▸ Baboon proof dustbins with heavy lids should be installed coupled wit setting up a regular mechanism for safely disposing of the waste

The specific Programme actions that will require a detailed Action/ Development Site Specific EIA[5] prior to implementation are:

- ▸ Tourism sinks with special development and administration needs, such as a potential aerial walkway along the Grumeti River (Action 1.2.1)
- ▸ Development of new Special Campsites within the High and Low Use Zones (Activity 2.1.2.1)
- ▸ Development of new public campsites at Bologonja and Handajega (Activity 2.1.2.2)

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[5] Guidelines and document format are provided in the TANAPA (1994b) as well as the TANAPA Strategic Planning Manual (1995a)

COMMUNITY OUTREACH PROGRAMME

Community outreach strategy

> ***Programme Purpose: The support and collaboration of the communities surrounding SENAPA elicited in safeguarding the integrity of SENAPA's resource values***

The SENAPA outreach strategy strives to align the long-term development of community outreach in SENAPA with the programme purpose as defined above, and the organisational goals of TANAPA. The aim of the strategy is to provide a general statement of principles and policy to guide the Community Outreach Programme over the next 10 years.

Tanzanian National Parks was one of the first protected area management authorities in Africa to actively embrace outreach activities for communities around national parks. Since the late 1980's, best practice in this field has rapidly evolved, following both successes and failures, and this has fed into Tanzanian policy. The principle national policy-level instruments that form the basis for the SENAPA outreach strategy are: the National Policies for National Parks in Tanzania (1994), the Wildlife Policy of Tanzania (1998), and the TANAPA Strategic Action Plan for Community Conservation Services (2000).

Of particular relevance to the outreach strategy is the mission statement of TANAPA's Community Conservation Services (CCS) Strategic Action Plan for 2001-2004, which states:

> *CCS is a field programme supported by a unit in TANAPA headquarters, which aims to identify and implement opportunities for sharing parks' benefits with adjacent communities. CCS seeks to protect the integrity of National Parks by reducing conflicts between wildlife and surrounding communities, by improving relations with those communities and by helping to solve problems of mutual concern.*

The importance of increasing the value of the national parks to local people is recognised in the National Policies for National Parks in Tanzania. This policy states that TANAPA will extend its activities "*into surrounding communities with a focus on the local people and governments up to the district level. This outreach programme will be accompanied by mechanisms to ensure that the benefits of conservation are shared with local communities in appropriate ways*". The policy encourages "*compromise and flexibility*" in order to meet the needs of both the park and local people.

Over more than a decade, the SENAPA Outreach Department, which received a significant boost from the EU/ FZS funded STEEP (Serengeti Tourism, Education and Extension Project), has grown and strengthened and is now a firmly embedded and recognised aspect of park management. Nevertheless the task of the Outreach Department is significant with a population of some 2.3 million in the seven districts that abut the Park and nearly 300,000 living within 10 km of the park boundary. To work with these communities, the department currently has only four professional staff with a small allocation (7.5%) of the park budget.

The SENAPA community outreach strategy has recognised the limitations of the resources available and consequently concentrates on a few key aspects of the above national policies in order to guide the implementation of this programme and the achievement of the programme purpose, as described below:

Good relations between SENAPA and local communities/ government

SENAPA is intricately linked and affected by the human activities and land-uses occurring on its boundaries and *vice versa.* Poor park-community relationships in the past have both initiated and led to the escalation of conflicts over access to land and natural resources. Therefore SENAPA management will develop and elaborate mechanisms to promote dialogue and improve communication with local communities and government in order to enable conflicts to be amicably resolved and to develop modes of cooperation for mutual benefit.

Benefits sharing with local communities

SENAPA management recognises that park-adjacent communities bear direct and indirect costs of wildlife conservation; both through human-wildlife conflicts and the loss of access to land and natural resources. If these costs are not in part compensated, then the necessary community support for conservation will not be sustainable.

Consequently, SENAPA management will ensure that surrounding communities are receiving benefits from the Park to help counter the costs they incur, and increase community support for the continued conservation of the Serengeti. This is in line with national policy, which states, '*TANAPA will seek ways to share the benefits of conservation with local communities in ways that are sustainable and promote sound development*' (TANAPA, 1994).

Conservation and environmental education

Conflict and disputes between SENAPA and adjacent communities have often arisen from misunderstandings and a lack of communication about park regulations and boundaries. This lack of knowledge results in communities feeling distrustful of the Park, disempowered and unsure of their rights. To address these issues, SENAPA management will raise conservation awareness in the surrounding communities, and in particular clarify the rules, regulations and boundaries of the Park, through a well-structured education programme.

Community-based natural resource management initiatives

The sharing of park benefits with communities will be complemented by efforts by SENAPA management to improve land use and livelihood strategies surrounding the Park, in order to reduce their negative impacts on SENAPA natural resources, and increase the conservation compatibility of neighbouring land uses.

The guiding principles of the above strategy provide the basis for the two objectives of the Community Outreach Programme that define the future desirable state at SENAPA and address the relevant problems and issues facing SENAPA management. The two objectives are:

1. Neighbouring community and local government **support for conservation** strengthened
2. Threats to SENAPA resource values reduced through **improved community natural resource management** in buffer areas

In order to meet these objectives for the Community Outreach Programme, a series of 10-year **management targets**, with accompanying **management actions**, have been formulated, as described in the following sections. For each management target there is a brief de-

scription of the relevant management issues and opportunities, which provide the specific context and justification for the management actions. Table G.4 in Section G contains the **3-Year Action Plan** for the Community Outreach Programme for the period 2006-2008, which lists the activities, responsibilities, timeframe and input requirements necessary for the completion of the management actions.

Figure E.1 below shows the logical framework for the Community Outreach Programme.

Objective 1: Neighbouring community and local government support for conservation strengthened

The desired future state of SENAPA is one where the neighbouring communities and local government are fully aware and supportive of the aims and objectives of SENAPA. The three management targets to achieve this desired state involve enhancing park-community communication mechanisms, redressing the imbalance between conservation costs and benefits for neighbouring communities, and improving the educational programme.

Figure E.1: Community Outreach Programme Logical Framework

**COMMUNITY OUTREACH
PROGRAMME PURPOSE**

The support and collaboration of the communities surrounding SENAPA elicited in safeguarding the integrity of SENAPA's resource values

OBJECTIVES

Neighbouring community and local government support for conservation strengthened

Threats to SENAPA resource values reduced through improved community natural resource management in buffer areas

TARGETS

Park-community cooperation mechanisms enhanced

Community benefits from SENAPA enhanced and costs reduced

Conservation education programme improved and expanded

SENAPA collaboration in CBNRM initiatives strengthened

Target 1.1: Park-community cooperation, communication and conflict resolution mechanisms enhanced

The SENAPA Outreach Department is responsible for liaising with the 84 villages surrounding SENAPA, as well as with the 23 wards and seven districts. At present the department is understaffed with only four community conservation assistants in the department and the

Warden in charge, who is working on an acting basis. In previous years there was an additional department member in charge of community education, who took a more strategic role and provided materials and ideas for the zonal conservation assistants. However, despite these restrictions, there is much scope for the department to play a strategic role in the coordination and cooperation of the stakeholders in the ecosystem.

The department already carries out many activities that involve coordinating the outreach programme with local government, villagers, women's groups, village game scouts, as well as NGOs and private stakeholders around the Park. Many of these activities are informal and at present there is no official forum to coordinate stakeholders involved in community outreach and CBNRM activities. As the representative of the key player in the ecosystem, the Outreach Department will take the leading role in the coordination of all these stakeholders, as outlined in the following management actions:

Action 1.1.1: Enhance the two-way flow of information between park and communities

In order to build trust, respect and support for SENAPA, it is vitally important that regular communication with stakeholders in local communities occurs both formally and informally. Indeed, good communication is the basis on which all good relationships are built; simply listening often goes a long way to mitigating problems. If communication channels are open and the Park is perceived to be open to complaints, discussion, suggestions and concerns of the communities; conflict between the Park and communities will be reduced.

This management action will involve the Outreach Department participating in district development coordination meetings as well as instigating a series of regular meetings; including an annual stakeholder meeting hosted by SENAPA to discuss community-related issues between Outreach staff and local communities. SENAPA will also take a lead in coordinating all the private and NGO stakeholders carrying out outreach activities in the Tanzanian component of the ecosystem.

To complement these coordination activities, the SENAPA Outreach Department will disseminate departmental reports and newsletters to local stakeholders as widely as possible so as to improve surrounding stakeholders' understanding of Outreach Department objectives and to provide a more realistic assessment of the resources that are available.

Action 1.1.2: Evaluate the effectiveness of SENAPA outreach activities in collaboration with community and district representatives

After more than a decade of outreach activities, there is a clear need to assess what impact these activities are having, for a number of reasons. Firstly, with a limited budget, benefit sharing is best targeted to communities where it has the most beneficial effect on improving relations and creating positive conservation outcomes. Secondly, with fears that benefit sharing may actually attract people to the Park edge, there is an urgent need to confirm or allay these fears. Knowledge, attitudes and practices surveys were carried out in the 1990's and will serve as good baselines for assessing outreach activities. In areas where outreach activities have not yet reached, baseline surveys will be necessary.

Action 1.1.3: Carry out training on communication and conflict resolution to improve community liaison skills of rangers and wardens

It is recognised that all rangers and wardens are ambassadors for SENAPA and that all interactions with local communities (and indeed other stakeholders such as tourists) contribute to good park-community relations. However, current training of rangers and wardens concen-

trates more on military and adversarial skills, and thus community policing and social skills are often lacking. The instigation of a training programme under this management action will help to improve communication, conflict resolution and policing skills of all park staff.

Action 1.1.4: Improve SCIP planning mechanisms with communities and districts

The Support for Community Initiated Projects (SCIP) initiative was launched in 1992 and is the major focus of TANAPA's programme for sharing park benefits over the last decade. Unfortunately, there are indications that some of the SCIP projects that have been selected are not those perceived by villagers as being the most important or appropriate. Instead, local and/or national elites appear at times to have sought to intervene and take advantage of the SCIP initiative for development priorities more beneficial from their own perspective. In addition, in some areas, only those who are able to attend village meetings can influence the projects selected as community priorities, and thus less emphasis has been given to the concerns of pastoralists and women. The other major issue emerging is that the communities have very high expectations of the level of benefits they might receive. In some cases, this has led decision makers to dismiss the efforts by SENAPA as being inconsequential.

This management action will strive to share these benefits in a more transparent and realistic manner that addresses actual priority community needs. This will be achieved by ensuring that the procedures developed by TANAPA for SCIP projects, which are clearly laid out, are strictly adhered to. The Outreach Department will disseminate these SCIP guidelines and educate communities in both the wide range of projects that may be implemented (not just big building projects) and by canvassing the opinions and concerns of less vocal sectors of communities. This approach in turn will help to ensure that community expectations are more realistic.

Target 1.2: Community benefits from SENAPA enhanced and costs reduced

Through the SCIP initiative the Park has worked with surrounding villages in contributing to village development projects, mostly in the area of school improvement and health infrastructure development. In line with the SCIP guidelines, the Park has worked with district authorities and villages to ensure that the projects chosen are appropriate and match with district and village development plan priorities. The total annual value of the SCIP projects contributed to by the Park is shown in Figure E.2, with a total of about US$ 1,082,000 donated since the scheme started in 1992.

However, current problems include a high demand for benefits from local communities, insufficient mechanisms to create markets for local products, low community morale regarding project implementation, insufficient obvious benefits from community tourism and insufficient commitment to local training and employment. In order to address these issues and meet this management target, the following management actions have been formulated:

Figure E.2: Support to Community Initiated Projects (SCIP), 1992 – 2004
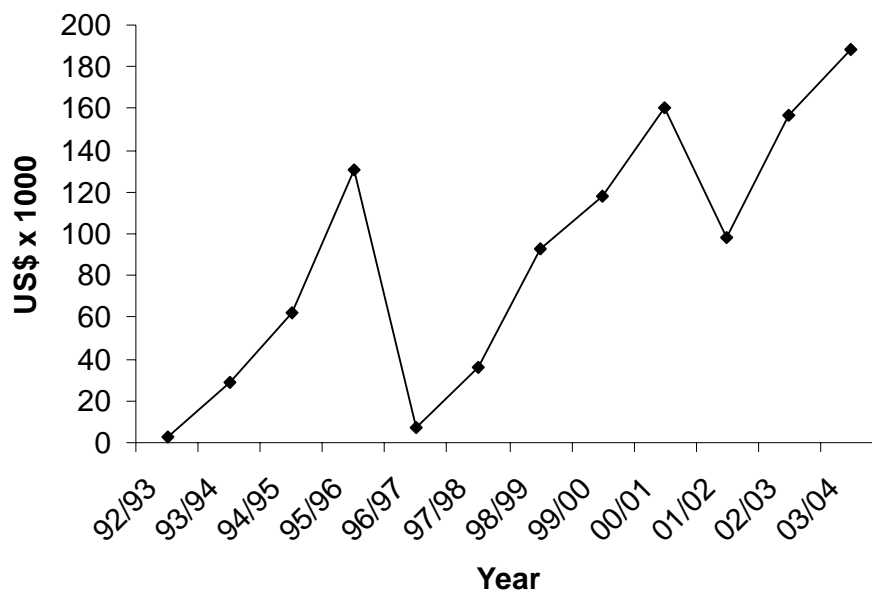
Action 1.2.1: Implement priority community-initiated projects as identified in planning

In order that benefits from SENAPA are clearly understood by communities, it is important to ensure that all SCIP projects (identified under Action 1.1.4) are officially handed over to communities and that the responsibilities for project implementation is clearly defined and agreed. Linkage with conservation will be clearly emphasised and signboards and appropriate events will be hosted to improve SENAPA's public relations.

Action 1.2.2: Provide support for conservation-friendly, income generating activities

Improving economic status is a high priority for all local communities in this relatively undeveloped part of Tanzania. With little access to agencies that can support development and the diversification of income-generating activities, communities look to SENAPA for help in this area. From research carried out in the Serengeti, it is thought that it is the most impoverished individuals in local societies that are driven to poach bushmeat to meet their basic protein and cash needs. Therefore there is evidence that if SENAPA can improve communities' economic status, it will lead to a decrease in illegal hunting.

Income diversification can take a myriad of forms and thus a number of activities have been drawn up to realise this management action. One clear area to be covered is exploring the potential of improving liaison between producers and consumers of local produce and foodstuffs. Tourist facilities in SENAPA still regularly import the majority of their fresh produce from outside local districts. Ways of encouraging local producers to provide the right type of fresh produce in the right quality and quantity will therefore be sought. Already, to the west of the Park, a group has been assisted in providing produce, under contract, to some lodges and this scheme will be developed during this GMP.

Similarly local handicrafts also have the potential to be sold locally, nationally and internationally, but there is a huge gap between producers and consumers in the knowledge of the

types of products that are marketable, and in how markets might be accessed. SENAPA and TANAPA will help to bridge this gap and to identify further opportunities for small-scale, conservation friendly income-generating activities that can be developed by community self-help groups.

In addition, SENAPA will facilitate, or where possible provide support in building the necessary skills in the local communities; for example, in entrepreneurial skills and the facilitation of community savings and loan schemes, training in livestock production and health, or the provision of alternative protein sources. Finally the success of these income-generating activities will be assessed to see whether there is an improvement of human livelihoods, attitudes to the Park, or a concomitant reduction of illegal bushmeat hunting.

Action 1.2.3: Assist communities in mitigating human-wildlife conflicts

Over recent years, with the increase in human populations, an increasingly 'hard-edge' to sections of the Park boundary, the recovery of elephant populations from the poaching pressure of the 1980's and improved security within the Park, instances of human-wildlife conflict have apparently been growing. Crop raiding by elephants and other herbivores, such as baboons, are a considerable problem at certain times of the year to the west of the Park, whereas to the east livestock predation is becoming common. In a few cases, human lives have been lost. In all these cases, communities frequently appeal to SENAPA to come to their assistance.

In response SENAPA rangers and drivers have frequently directly provided assistance to villagers in frightening off elephants from crops. More recently, an investigation into the scale of human-elephant conflict has been conducted and a pilot project to assess the scale of elephant damage to crops and to test alternative mitigation techniques has been instigated by TAWIRI. Human-wildlife conflicts are clearly a multifaceted problem, with many stakeholders involved in finding solutions. Nonetheless, SENAPA clearly must collaborate with all parties to reduce these conflicts that can so rapidly sour park-community relations.

As a first step to mitigation of human-wildlife conflict, accurate records of incidents will be established. This will involve standardising recording protocols that must be carefully followed. With a baseline of conflicts established, alternative mitigation techniques will be tested and the best "package of methods" established. With this information communities will be empowered to implement the chosen techniques, with assistance from outside stakeholders where necessary. In specific situations where there is no other solution to particular problem animal, the Protection or Veterinary Departments may need to be involved in euthanasia.

Action 1.2.4: Promote the employment of local people by park stakeholders

Although by equal opportunities law TANAPA is obliged to advertise professional posts widely and are thus constrained when appointing people locally, there are a number of opportunities each year that SENAPA will advertise locally for unskilled workers. Also SENAPA will ensure, when opportunities arise, that local communities are aware of vacancies.

In addition, private stakeholders in the area are not so strictly bound by government regulations and have more flexibility in employing and training local community members. For example, some community based tourism initiatives employ a quota of local people. SENAPA Outreach Department will help to facilitate and liaise with tour operators and other stakeholders to find ways of promoting local employment in or around the park.

Target 1.3: Conservation education programme improved and expanded to be more accessible and relevant to local needs

Education has been a core part of Community Outreach activities since extension programmes were initiated over a decade ago. The department currently carries out conservation education in neighbouring villages, which involves showing conservation films to both school and adult audiences, providing teacher support as well as supporting and helping to promote environmental and socially beneficial projects, such as tree-planting and improved fuel stove technology projects.

However, this education programme needs to be reinvigorated and expanded through the provision of up-to-date equipment and materials and increased capacity. In order to meet this management target, the following management actions have been formulated:

Action 1.3.1: Improve the scope and content of education materials

Desktop publishing facilities, which were available within SENAPA in the 1990's, are no longer functional and this management action will re-establish these facilities through acquiring the necessary equipment and providing user training. This will enable local newsletters and educational materials to be written, published in-house and disseminated. Where possible this management action will source new materials, both written or filmed, from relevant conservation and development organisations and, where appropriate, write new or adapt existing materials.

Videos are a key educational media used by the Outreach Department; however, in recent years it has not been possible to show films due to non-functioning equipment. This management action will re-establish the ability of the department to show films, through the provision of a functioning vehicle and up-to-date audiovisual equipment (e.g. a DVD/ video/ computer projector and screen, with a generator to provide power).

Action 1.3.2: Scale-up education programme to all park-adjacent districts

The educational activities have generally been carried out only in selected villages and districts, but there is scope to extend these activities to all the districts around the Park; tailored to local cultural and social situations. However, given the large number of villages surrounding the Park and the limited human and other resources of the Outreach Department, providing sufficient outreach educational services is a substantial challenge. This management action will develop new strategies to increase the amount of outreach occurring in the villages by making it as cost-effective as possible. This will free up extra resources to gradually expand the education activities to other prioritised areas.

Action 1.3.3: Expand the scope of environmental education activities in selected areas

In recent years, the SENAPA Outreach Department has supported the formation and revival of environmental conservation groups in some villages, or supported indigenous groups. These groups only occur in a limited number of villages around SENAPA and thus there is great potential to increase their number. Seedlings have been provided for community members as part of the greening campaign, which has proved a partial success. This management action will scale-up the provision of seedlings and work to ensure greater success rates.

The Outreach Department will also develop a demonstration plot in the next three years to test the success of indigenous species of both trees and flowers. With invasive and exotic

species becoming a growing problem throughout protected area, as local and international travel increases, SENAPA recognises that improving the level of knowledge in communities of this threat is vital for the Park's future.

Action 1.3.4: Organise park visits for children and traditional leaders

Visits by school groups have been a regular feature of the Outreach Department's activities for many years, since the hostel was built as part of STEEP, and are a powerful way of raising the profile of conservation. Recently activities were hampered because the original zebra lorry had broken down. However, a new lorry will be made available under this management action. Community elders and indigenous leaders will also be targeted by this management action, as they have greatest influence in forming attitudes to wildlife and conservation in their communities.

Action 1.3.5: Incorporate the promotion of family planning and HIV preventions into the education programme

It is universally recognised that growing human populations are the greatest threat to wildlife and wild places across the globe. In addition, the increasing impact of HIV is a great threat to the economic and social development of local communities and to park staff. Whilst recognising that SENAPA's mandate is not in health education and that the complex issues of population growth and poverty are a major challenge internationally, SENAPA cannot completely ignore these issues. SENAPA already produces HIV prevention educational materials for park staff and this material will be made available by the Outreach Department to local communities, along with other relevant and appropriate educational materials.

Objective 2: Threats to SENAPA resource values reduced through improved community natural resource management in buffer areas

The desired future state of SENAPA is one where surrounding areas are sustainably managed in a manner that supports the maintenance of biodiversity in the Park. The management target to achieve this desired state seeks to improve the community management of natural resources in the adjourning land, as described below.

Target 2.1: SENAPA collaboration in CBNRM initiatives with government, NGO and private stakeholders strengthened

In order to address the growing impacts of land-use change and human population increase on the Park resources, SENAPA has been collaborating with other ecosystem stakeholders in promoting initiatives aimed at empowering local communities to improve their management of natural resources.

In the last few years, a major new initiative by the Tanzanian Government is becoming a reality, with policy and legalisation providing for community-run Wildlife Management Areas (WMAs). Currently WMAs have been proposed to the east (Eramatare and Natron Proposed WMAs), west (Ikona Proposed WMA), and south (Makao Proposed WMA) of the Park. The new WMAs will provide the opportunity for villages to enhance their sustainable benefits from wildlife and other natural resources within these areas. In addition, they will help to improve the security and integrity of the wildebeest migration and other resident species. As of March 2005, the Ikona Proposed WMA application is being sent to the Ministry, the Makao Proposed WMA is awaiting the approval of user rights, and Natron Proposed WMA is conducting land-use planning.

However, there have been delays in establishing WMAs due to community suspicion surrounding WMA implementation, bureaucracy hampering the implementation of national Community-Based Conservation policy, and conflicting interests between leaders and the community. In addition, there is a lack of a proposal for a WMA to act as a buffer on the north-western hard edge of the Park.

Although it is not the direct responsibility of SENAPA to facilitate the formation of these WMAs and progress towards their formation has been slow, collaborating with other stakeholders and supporting local communities in the establishment of these new WMAs is an important priority for this GMP. The main reason for this is that the WMAs provide a clear and nationally approved mechanism to ameliorate the growing impacts on park resources from the surrounding human populations, and therefore should be supported wherever possible.

WMAs are not the only community-based natural resource management (CBNRM) initiative in the ecosystem. With the difficulties encountered with WMA formation, some communities have chosen another route for CBNRM. For example, Olesososkwan Village have signed a lease with Conscorp Africa for a tented camp on their village lands, and have put aside some of their land for its exclusive use. SENAPA recognises that park-adjacent communities may pursue non-WMA CBNRM routes and, where practical, will support and collaborate with such initiatives.

In order to meet this management target, the following management actions have been formulated:

Action 2.1.1: Work with stakeholders to identify promising CBNRM initiatives

The Outreach Department will work closely with the district authorities in identifying suitable target communities adjacent to the Park with which to develop CBNRM initiatives. Once these communities have been identified, the Outreach Department will assist in the identification of the major issues that need to be addressed from the perspective of SENAPA as well as the communities. The identified CBNRM initiatives will include resource substitution approaches as well as conservation compatible income-generating activities.

Action 2.1.2: Support and participate in planning and management capacity building for CBNRM initiatives

SENAPA personnel have considerable experience in financial and administration management, surveying, and protected area planning. The Outreach Department will take the lead in coordinating the transfer of this knowledge from the relevant SENAPA departments to the newly formed CBNRM initiatives. This will involve support in conducting village surveys, running natural resource management committees, and designing village land-use management plans.

Action 2.1.3: Train village game scouts in collaboration with other stakeholders

With extensive experience in training TANAPA wardens and rangers, SENAPA will provide training for village game scouts, particularly providing 'on-the-job' experience and advice on the type of training required. The training will be provided by the Resource Protection Department (see Park Operations Programme Action 1.1.5), but facilitated by the Outreach Department. Although budgets are limited, efforts will be made to assist with equipment provision. Moreover, collaboration with newly-formed village game scout forces will be developed in order to provide a coordinated and professional effort in law enforcement in the ecosystem.

Action 2.1.4: Collaborate with SENAPA Veterinary Department in implementing veterinary outreach activities in local communities

The main focus of this management action is to address priority animal health and wildlife-domestic animal disease transmission issues.

Action 2.1.5: Work with relevant stakeholders in furthering the establishment and development of neighbouring WMAs as appropriate

Although not the primary facilitator for WMA formation in the area, SENAPA will actively contribute by encouraging and supporting the communities and the other stakeholders where practical. In particular, this will involve reassuring communities that all stakeholders are working together and that the WMA process does not confer management rights to SENAPA.

Mitigation of environmental impacts of major Community Outreach Programme actions

The potential negative environmental impacts of the major Community Outreach Programme actions and proposed mitigating measures to reduce, eliminate or offset adverse affects are highlighted in Table E.1 below.

Table E.1: Mitigation measures for major Community Outreach Programme actions

Major action	Potential negative impact	Mitigation measure
1.2.2: Provide support for conservation-friendly, income generating activities	Increased immigration into areas surrounding SENAPA as a result of benefits generated by Outreach Department	▶ Ensure any SCIP or IGA activities target existing and well established communities
		▶ Monitor immigration rates into areas where community outreach activities operate
	Benefits from IGAs are unfairly captured by wealthy/ powerful community members	▶ Target support towards activities that will benefit the poorest/ marginalised sections of society
		▶ Ensure any initiatives developed are through community based organisations
	SENAPA's high quality tourism product is degraded by inappropriate initiatives or activities (e.g. unlicensed hawkers around the airstrip)	▶ Raise awareness to community members of the negative effects of inappropriate activities on the SENAPA tourism experience
		▶ If necessary, support the formation of village bylaws to prevent inappropriate activities

PARK OPERATIONS PROGRAMME
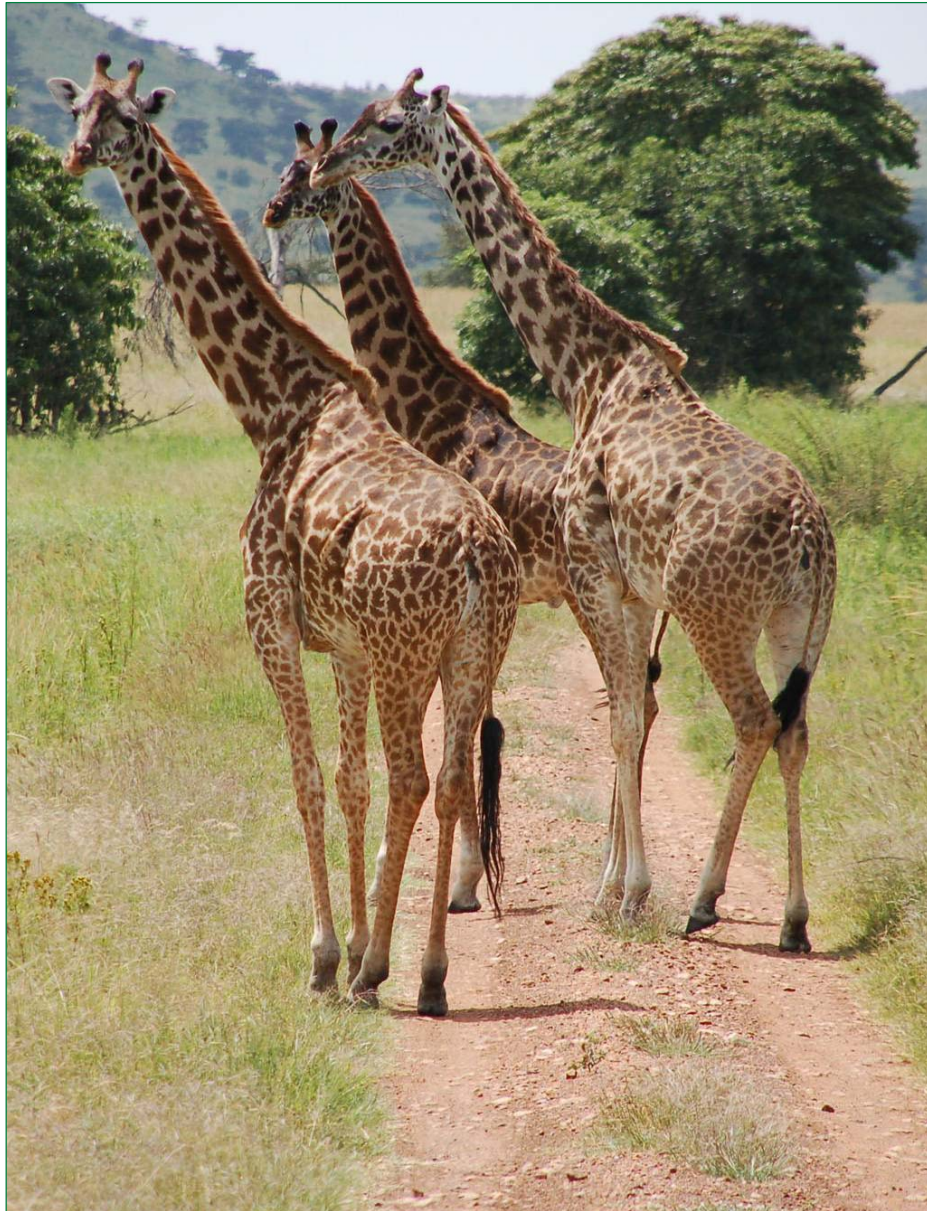
Park operations strategy

> ***Programme purpose: Efficiency and effectiveness of SENAPA park operations enhanced, such that SENAPA becomes a role model nationally and internationally***

The SENAPA park operations strategy seeks to align the park infrastructure, services and operations with the programme purpose described above and with relevant national policies. The aim of this strategy is to provide a general statement of principles and policy to guide the Park Operations Programme over the next 10 years.

The principal national policy-level instruments that the SENAPA park operations strategy needs to take into account are: the National Policies for National Parks in Tanzania (TANAPA, 1994); the Development-Action-Lease Procedures (TANAPA 1995b), the Environmental Impact Assessment (EIA)/Pragmatic Environmental Assessment (PEA) guidelines (NEMC, 1997), the Wildlife Policy 1998 and the Code of Conduct for rangers. The other instruments include the Financial Regulations and Procurement Act of 2001.

The Park Operations strategy incorporates a set of principles designed to achieve the programme purpose and to ensure alignment with national policies and strategies, as described below:

Protection of resources and use

Serengeti National Park is world famous for its natural resources; however, local communities, who are traditional hunters, surround the Park and some are involved in the illegal and unsustainable extraction of these wild resources. In response, SENAPA management will protect these resources for present and future generations, by supporting non-consumptive in-park activities, strengthening law enforcement, and influencing responsible hunting practices in surrounding protected areas and communities.

Following the discovering of gold deposits in the Kilimafedha lavas and sediments, which are exposed in the hills and streambeds of north-central Serengeti, the prospect of the *commercial extraction of mineral resources* from the Serengeti is a feasible threat to SENAPA. The Mining Act (No.5 of 1998) and TANAPA policy does not allow mining in national parks except with the written consent of the authority having control over the Park. In line with the recommendations of the Committee on Mining in Protected Areas (established by TANAPA) and the conservation strategy of the Wildlife Policy, permission will not be granted for exploration or mining within the Serengeti for the duration of this GMP.

Visitor safety in the Park

The funding needed to manage the Park relies on the revenue generated by the thousands of tourists that annually visit SENAPA to experience the Park's resources and landscapes. SENAPA management appreciates the importance of visitors and recognises that if their safety is not assured, visitor numbers and the revenue needed to maintain the Park would fall. Therefore, ensuring the security for visitors in the Park, whether they are in a lodge, hotel, campsite or on a game drive, is a high priority to SENAPA management in their day-to-day operations.

Staff motivation

SENAPA management appreciates the fact that the effectiveness and efficiency of park operations is related to individual and group commitments to perform to a high standard and to work in tough and at times risky situations. Therefore, SENAPA management will provides incentives in the form of good work facilities, equipment, salaries, housing, training and social amenities to assist staff in better undertaking their assignments. SENAPA management will use all means possible to develop a dedicated, committed and disciplined workforce to achieve the Park Operations Programme purpose.

Maximization of park revenues and supplies

Since conservation must pay for itself, SENAPA management endeavours to diversify tourism activities, which are a major source of revenue in the Park. The objective is to collect adequate revenues from entrance gates, concessions, sales of guide books, landing fees, ballooning, walking safaris and so on in order to fund the costs of managing the Park. These operational costs include: administration, field patrols, road and building works, equipment, uniforms and maintenance.

Improved park infrastructure and services

Over the years, there has been considerable investment in park infrastructure, especially the road network. However, these roads are frequently destroyed by heavy vehicle use, especially along the public road that passes through the Park, and the buildings are of poor standard. SENAPA will work to maintain the existing road and building infrastructure and will strategically locate new ones, if appropriate. Services to visitors and staff will also be improved, in particular telephone communication, water, Internet services, and public toilets.

Working with others

The wildlife living in the Park knows no boundaries and depends on the broader ecosystem outside of SENAPA for their survival (e.g. the migration). In addition, there are many neighbouring land-users that are affected by the presence of the Park and numerous other stakeholders interested in the future of the Park. Therefore, SENAPA will cooperate and collaborate with others in order to understand their perspectives, expand SENAPA's sphere of influence and ensure the survival of the Park within the larger Serengeti ecosystem.

These guiding principles of the SENAPA park operations strategy provide the basis for the **objectives** of the Park Operations Programme that define the future desirable state at SENAPA and address the relevant problems and issues facing the SENAPA management. The four objectives are:

1. **Natural resource values and human life and property** are effectively and efficiently protected
2. Efficiency of SENAPA **park operations strengthened**
3. SENAPA **infrastructure and service standards** improved
4. Local, national and international **collaboration** in the long-term conservation and management of SENAPA and the wider ecosystem strengthened

In order to meet these objectives for the Park Operations Programme, a series of 10-year **management targets**, with accompanying **management actions**, have been formulated, as described in the following sections. For each management target there is a brief description of the relevant management issues and opportunities, which provide the specific context and justification for the management actions. Section G contains the **3-Year Action Plan** for the

Park Operations Programme for the period 2006-2008, which lists the activities, responsibilities, timeframe and input requirements necessary for the completion of the management actions.

Figure F.1 below shows the logical framework for the Park Operations Programme.

Figure F.1: Park Operations Programme Logical Framework
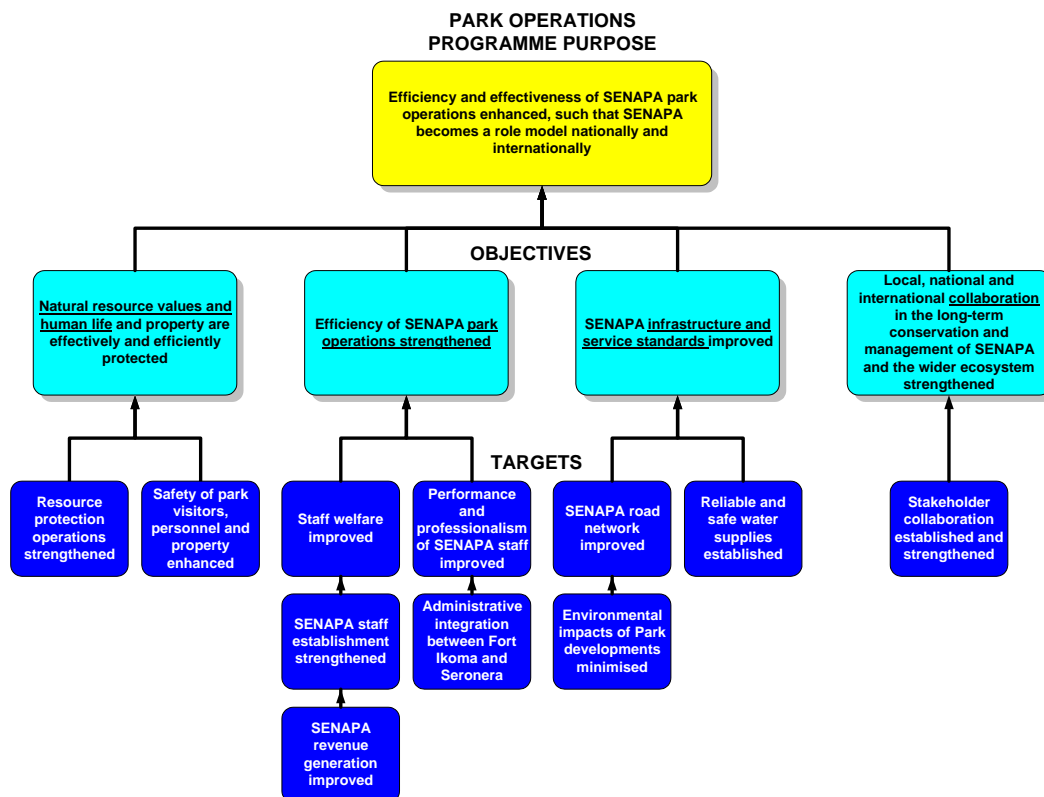
Objective 1: Natural resource values and human life and property are effectively and efficiently protected

The desired future state of SENAPA is one where natural resources are protected and the safety to park visitors, personnel and their property is ensured by a well-coordinated and committed ranger force. The two management targets to achieve this desired state are firstly to strengthen resource protection operations and secondly to improve security and communication networks.

Target 1.1: Resource protection operations strengthened in collaboration with surrounding communities and other stakeholders

The Resource Protection Department is the largest department in the Park, employing 158 out of the 342 park staff, and has the responsibility for addressing this target. In order to effectively manage the spatially extensive resources at SENAPA the department has divided SENAPA into five resource protection zones (see Figure F.2 over page), each headed by a zonal warden.

Resource protection patrols are carried out from 17 ranger posts, which are located at strategic locations throughout the Park. The facilities at each ranger post are shown in Table F.1 over page. As can be seen, a number of stations are lacking equipment, such as binoculars, night-vision goggles, tents and GPS' with which to carry out their patrols effectively.

Figure F.2: SENAPA Patrol zones
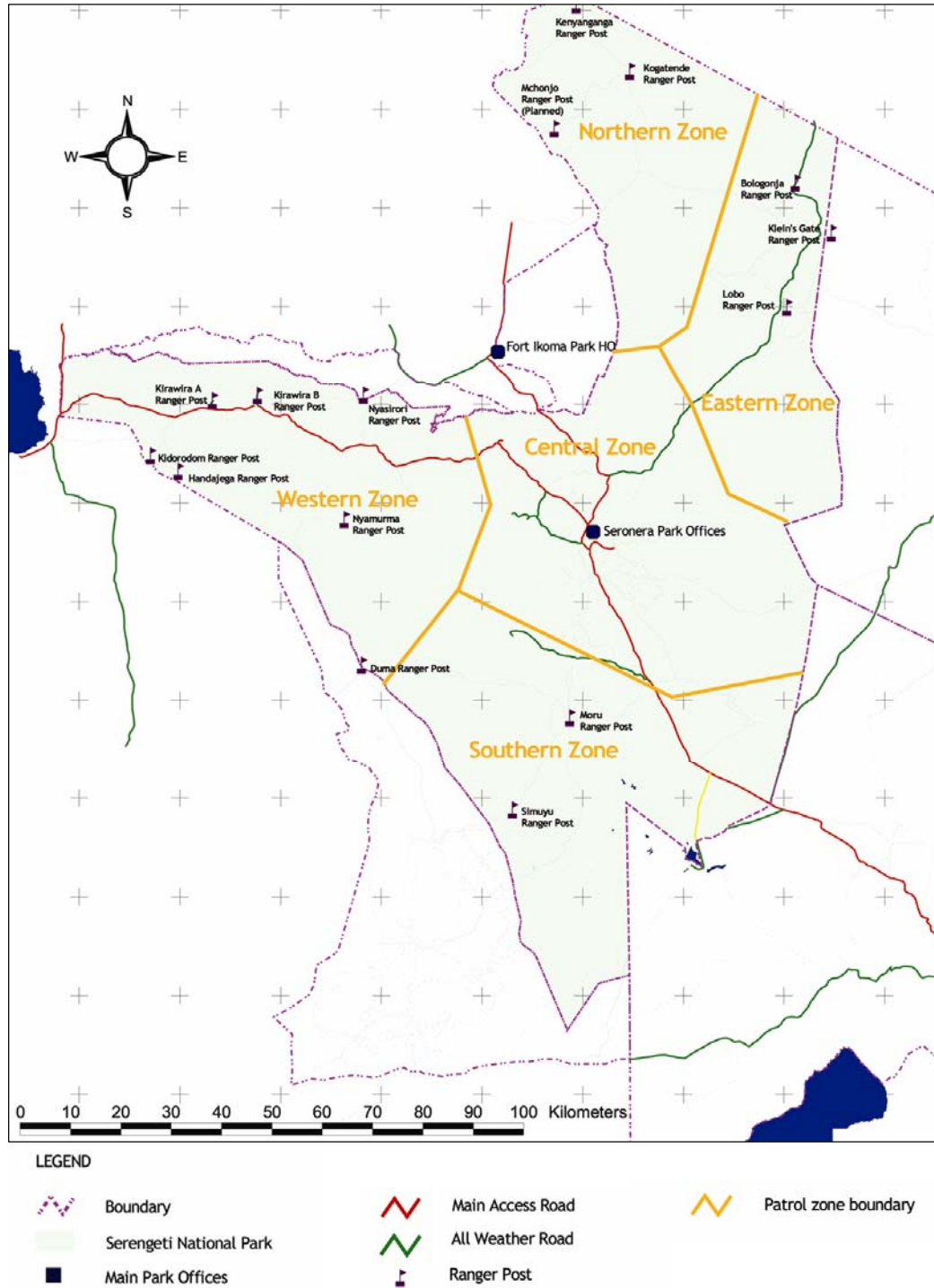
Table F.1: Resource protection ranger posts and infrastructure in SENAPA

Guard Post (x17)	Housing Condition	Patrol Vehicle	Weapons	Armoury	Lock-up	Radio - VHF/HF	Night Vision Goggles	Binoculars	Tents	GPS	Rain Gauge	Guards allocated	Wardens
Fort Ikoma	Good	1 new tdi l/r	Sufficient	Good	None	1 VHF 1 HF	None	1 - sufficient	1 - sufficient	None	None	17	1
Kenyangaga	Good	1 new tdi l/r	Sufficient	Door not lockable	Door not lockable	1 VHF	None	Out of order	1 - insufficient	None	Present	7	-
Lamai	Good	1 new tdi l/r	Sufficient	Good	Good	1 VHF 1HF	?	None	1 - insufficient	None	Present	8	1
Kokatende	Good	1 new tdi l/r	Sufficient	Good	Good	1VHF	None	None	1 - insufficient	None	Present	6	1
Tabora 'B'	Good	1 new tdi l/r	Sufficient	Good	Good	1VHF	None	1 pair	None	None	Present	7	1
Bologonja	Good	1 new tdi l/r	Sufficient	None	None	1VHF	None	None	None	None		7	-
Klein's	Good	1 service-able tdi l/r	Sufficient	Present	Present	1VHF	1 pair	1 pair	3	1	Present	6	1
Lobo	Good	1 new tdi l/r	Sufficient	Present	Present	1VHF 1HF	None	?	1	None	Present	6	1
Ikoma Gate	Good	None	Sufficient	None	None	1VHF	None	None	None	None	None	3	-
Naabi Gate	Good	1 service-able tdi l/r	Sufficient	None	None	1VHF 1HF	None	None	None	None	None	4	1
Moru	Good	3 tdi l/r	Sufficient	None	None	1VHF 1HF	2 pairs	2 pairs	3 - sufficient	?	Present	12	1
Duma	Good	1 service-able tdi l/r	Sufficient	Present	Present	1VHF 1HF	None	1 pair	1	None	1	8	1
Handajega	Good	1 new tdi l/r	Sufficient	Present	Present	1VHF	None	1 pair	2	None	Present	6	-
Seronera	Poor	1 new 1 service-able tdi l/r	Sufficient	Present	None	1VHF	1 pair	2 pairs	2	1	None	23	-
Nyasirori	Good	1 – service-able tdi l/r	Sufficient	Present	Present	1VHF	None	1 pair	None	1	Present	6	-
Ndabaka	Good	None	Sufficient	None	None	1VHF	None	None	None	None	Present	3	-
Kirawira	Good	1 – service-able tdi l/r	Sufficient	None	Present	1VHF 1HF	None	1 pair	2	1	Present	7	1
TOTALS	-	18	-	11	10	17VHF 7 HF	4 Pairs	11 Pairs	18	4	-	136	10

However, wildlife offtake within the Park remains a substantial threat to the natural resources of the Serengeti. Over the past decade, there appears to be a gradual upward trend in the total number of hunters arrested in the Park (see Figure F.3 below), although care must be exercised in interpreting the data, as there is no indication of the degree of effort invested in resource protection in the data series.

Figure F.3: The annual total number of poachers arrested in Serengeti National Park, 1993-2003
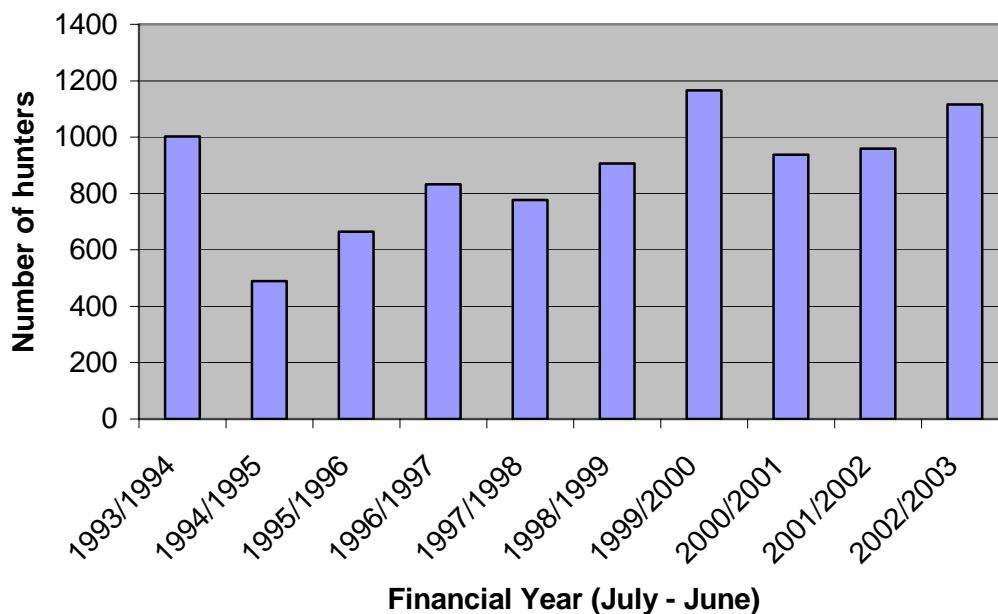
Source: SENAPA 2004

Table F.2 over page shows the range of illegal activities identified with arrested persons and Figure F.4 indicates areas of spatial variations in degrees of risk from illegal hunting. Wildlife offtake is the major illegal activity, accounting for nearly two-thirds of the reported activities from arrested persons. The next major threat to the park resources is from habitat destruction, resulting from bush clearing for cultivation sites along the boundaries; cutting of trees and grass; firewood collection and man made fires within and outside the Park.

The continued, if not increased, levels of illegal natural resource offtake in the Park suggests that despite the professionalism and efforts of the Park's Resource Protection Department, the current park resource protection strategies are alone insufficient to reduce wild-resource offtake in the Park. New strategies are needed that concentrate on developing solutions directly with the local communities from where the wildlife offtake pressure arises. In addition, the efficacy and appropriateness of the prosecution process for hunters apprehended within the Park needs to be reviewed so as to ensure that there is an adequate deterrence against illegal resource use.

Table F.2: Products or activities identified with arrested persons at the time of their arrest in the Serengeti National Park, October 1998 – March 2000

Resource use	Frequency	Percent-age of Total	Percent-age of Arrests	Female	Male	Gender not re-corded
Hunted wildlife	403	65.85	74.35	0	389	14
Fish	52	8.5	9.59	4	48	0
Grazing	48	7.84	8.86	18	29	1
Fuelwood	46	7.52	8.49	29	17	0
Building poles	26	4.25	4.80	6	20	0
Honey	9	1.47	1.66	0	9	0
Medicine	6	0.98	1.11	4	2	0
Mining	6	0.98	1.11	0	6	0
Cultivation	4	0.65	0.74	0	4	0
Thatch grass	4	0.65	0.74	2	2	0
Water collection	3	0.49	0.55	3	0	0
Charcoal	3	0.49	0.55	1	2	0
Birds – live	1	0.16	0.18	0	1	0
Timber	1	0.16	0.18	0	1	0
Totals	**612**	**100.00**	**100.00**	**67**	**530**	**15**

Source: Campbell et al. (2001)

Figure F.4: Spatial variations in degrees of risk from illegal hunting
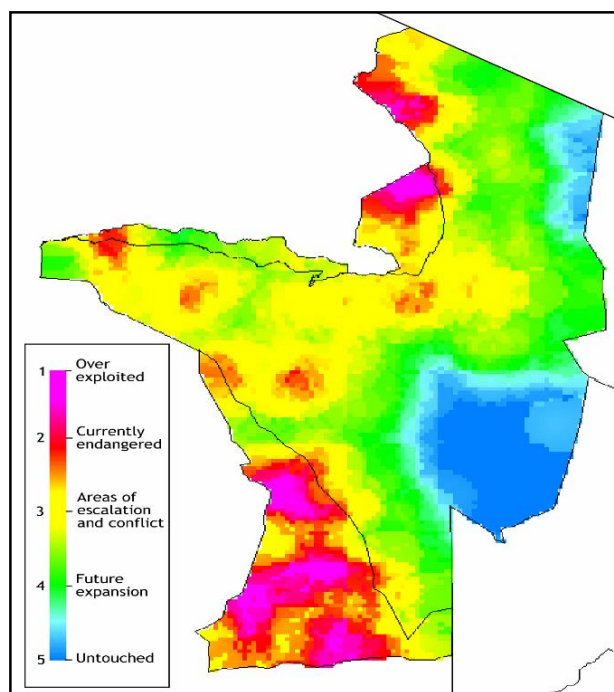
Source: Adapted from Campbell et. al. (2001)

In order to cope up with the increasing challenges for resource protection, SENAPA management will revise its strategies to take on board new innovative ways that will strike a proper balance between the needs of adjacent communities and other stakeholders and the preservation of park resources. In order to meet this target, seven management actions have been formulated and are described below.

Action 1.1.1: Provide modern equipment for anti-poaching activities

Anti-poaching operations are high risk and dangerous, therefore it is critical that the rangers are properly equipped to maximise their safety as well as their effectiveness. As identified in Table F.1 above, the resources available at certain ranger posts are insufficient for effective anti-poaching operations. This action will ensure that all the park ranger posts are properly supplied with the working equipment needed to conduct their law enforcement activities and that this equipment is maintained to a high standard.

Action 1.1.2: Carry out an assessment of new anti-poaching techniques and implement pilots

In recent years a great deal of progress has been made to develop techniques in conservation that utilise emerging technologies, such as GIS and night visioning. This action will assess these techniques in order to see how they can best support the Park anti-poaching efforts; including the special needs of species protection, such as for the Black rhino. Promising new or improved technologies will be tested through a rigorous piloting, before scaling up for adoption across the Park.

Action 1.1.3: Establish cooperation with traditional leaders in raising local community awareness

Enlisting the cooperation and support of local communities will be an important preventative approach that the Resource Protection Department will adopt in tackling the threat of poaching. By forming better relationships with the local communities, it is hoped that progress will be made to change the attitudes that lead to poaching practices. This action will concentrate on building awareness amongst the neighbouring communities of the national and international conservation importance of the park resources and establishing a sense of ownership for their conservation. This will principally be achieved by strengthening the relationship and trust with the traditional leaders and encouraging them to instil discipline and responsibility in their young members towards conservation of park resources.

Action 1.1.4: Liaison with Community Outreach Department in building ranger - local community cooperation and reward schemes regarding anti-poaching activities

Building on the relationships and trust established between the local communities and the rangers under Action 1.1.3, this management action will seek innovative ways to encourage and reward communities who support the anti-poaching efforts of the Resource Protection Department. These activities along with the next action will be done in close collaboration of the Community Outreach Department (see Community Outreach Action 2.1.3).

Action 1.1.5: Provide support to village governments in training VGS for protection of community conserved areas

It is recognised that the Resource Protection Department, at its current size and with the existing poaching levels, will never be able to adequately protect all the resources under its responsibility. In fact, it is unlikely that there will ever be sufficient resources to achieve this

mandate, until the root causes of poaching are addressed. Therefore, this management action will concentrate on enlisting community members residing within the Serengeti ecosystem to enforce natural resource use byelaws on land they have set aside for conservation. The Community Outreach Department will facilitate the Resource Protection Department to provide support in developing and conducting the Village Game Scout training programmes.

Action 1.1.6: Solve boundary disputes

With increasing populations surrounding the Park, there are increasing demands for land, which have led to boundary disputes with SENAPA. In recent years a boundary conflict has emerged on the north-western boundary in the Lamai wedge, in Tarime District. This conflict was initiated by the neighbouring villages that forcibly wanted access to the Gongora swamp, which provides an important dry-season salt-lick and water source. In addition they were demanding SENAPA land for cultivation and settlement to cope with the increasing populations in the villages and the influx of immigrants from outside. In 1998, it was proposed that the existing park boundary, which follows a line to the west of the swamp thereby excluding access to the swamp by villagers, be aligned to divide the swamp in half and thence proceed to a new point on the Isuria escarpment, east of where it now lies. As far as it currently stands, the park boundary remains unchanged and the conflict has been resolved amicably.

To formerly conclude this dispute, and to minimise the chance of future boundary disputes arising, the Resource Protection Department will work with the districts and the Community Outreach Department to clearly demarcate the park boundary, with particular attention given to contentious areas. Disseminating clear maps within the neighbouring districts and amongst park staff will support the enforcement of the demarcated boundary. When intelligence identifies new boundary disputes, the Resource Protection Department and Outreach Department will rapidly respond to resolve the conflict at an early stage.

Action 1.1.7: Collaborate with other law enforcement agencies

The final action under this target will seek to increase the spatial extent and effectiveness of anti-poaching operations by improving collaboration with neighbouring protected area law enforcement agencies. Joint operations will be undertaken whenever necessary, depending on the magnitude of the problem and availability of funds. In addition, efforts will be made to follow-up on arrested persons, to ensure that the paperwork and legal procedures are satisfactorily completed.

The lack of a Code of Conduct for SENAPA rangers presents a problem in carrying out effective and efficient patrols within the Park. The Code of Conduct will be developed and put into place by Action 2.2.1 under this programme.

Target 1.2: Safety of park visitors, personnel and property enhanced

Within the last decade, there has been a history of car hijackings and breaking and entering, both in the Serengeti and the Ngorongoro Conservation Area. Between June 2000 and January 2001, a special government operation was executed mainly in Ngorongoro District in order to reduce the incidence of banditry. Since this operation, car hijackings and incidents of visitor-related crime have decreased and are currently a relatively rare occurrence.

As stated in the Park Operations Strategy above, the security to visitors and staff is a high priority to SENAPA management. At present rangers are posted continually at all major visitor accommodation facilities on a 24-hour basis, with the exception of some SENAPA facilities at Seronera – for example the Youth Hostel, which are in close proximity to a ranger post.

Another aspect of security around SENAPA that will be addressed by this GMP is cattle rustling, which continues to be a problem from Loliondo through the northern part of the Park to Serengeti and Tarime Districts and on to Kenya, as recorded in Table F.3 below. Recently, a cooperative agreement has been initiated to coordinate anti-cattle rustling efforts between village leaders and stakeholders from the areas concerned. Success has already been noted, with an example in 2004 where all the stolen cattle were recovered following a raid in Loliondo.

Table F.3: Cattle rustling incidences recorded around SENAPA, 1988 – 2004

Year	Number of incidences	Number of cattle stolen
1988	1	28
1989	2	360
1990	3	104
1991	2	80+
1992	1	Unknown
1993	No records	No records
1994	1	48
1995	2	Unknown
1996	1	12
1997	12	583+
1998	4	50
1999	2	52
2000	14	1043
2001	12	821
2002	5	811
2003	1	87
2004	2	418

During the implementation of the GMP, SENAPA management will enhance the existing initiative to ensure that the achievements in security to date are sustained and improved upon. The management actions to achieve this target are described below.

Action 1.2.1: Strengthen surveillance patrols in prone areas

The Resource Protection Department already has a good understanding and documentation of where insecurity occurrences are most prevalent. To better utilise the existing manpower, the surveillance patrols will be concentrated in these insecure areas, and special attention will be given to ensuring that the patrols are properly equipped. The surveillance operations in general will also adopt better screening processes for people entering the Park as well as monitoring suspicious actions in the surrounding communities and tourist facilities.

Action 1.2.2: Improve communication/ radio network

A good communications network is one of the key foundations for the SENAPA security operation. Rapid and appropriate responses to illegal activities are only possible when information of incidences can be communicated immediately from throughout the Park and the surrounding area to a coordinating centralised system. To achieve this, the network will be expanded and maintained to include park staff, tour operators/ concessionaires, authorities in charge of neighbouring land and other land-users within the ecosystem. This action will also ensure that members of this network are given the relevant communication equipment and training to be able to properly participate.

Action 1.2.3: Install radio secrecy and minimise frequency interference

Radios are the principle form of communication for the security operations and to ensure the success and safety of these operations, it is essential that unauthorised persons cannot access this communication channel. This action will ensure that all park radio communication is properly protected from outside interference and unauthorised access.

Action 1.2.4: Collaborate with other law enforcement agencies and local communities

As with the resource protection operations above, the success of the security operations requires that SENAPA management collaborate with other law enforcement agencies and local communities neighbouring the Park, in identifying and dealing with law-breakers.

Objective 2: Efficiency of SENAPA park operations strengthened

The desired future state of SENAPA is one where there is an optimal number of well-trained and motivated personnel, who are performing their functions to a high standard and have the necessary facilities and management systems in place to achieve this. Below are described the five management targets to achieve this desired state.

Target 2.1: Staff welfare improved

The move of the Park Headquarters to Fort Ikoma in 1997 was in part aimed at improving staff welfare - in terms of having better services, especially fresh water, education for staff children, social interaction, mains electricity, food supplies and expanded health facilities. However, these improvements have only partially been completed.

This target will focus on completing the installation of all the envisaged staff facilities and services at Fort Ikoma as well as improving the park facilities and services for staff residing within the Park. The three management actions to achieve this are described below.

Action 2.1.1: Motivate and build capacity of staff

SENAPA management recognises that a well-motivated staff force is likely to be more committed and accountable in carrying out its obligations to a high standard. To achieve this SENAPA staff will be provided with the necessary training as well as infrastructure and supplies, based on a thorough assessment of capacity needs.

Action 2.1.2: Improve medical services

SENAPA management is particularly aware of the importance of undertaking measures to protect staff from diseases prevalent in the Serengeti area, such as Malaria, HIV/AIDS and Tuberculosis. SENAPA management will ensure that all personnel are properly informed on how best to protect themselves against these diseases, and that the appropriate supplies and equipment are available.

Action 2.1.3: Improve education opportunities for SENAPA staff

The SENAPA staff work in a remote area where there are no schools that are easily accessible. SENAPA management will facilitate the construction/ rehabilitation of a boarding school

for the staff children, which ideally will be located at Fort Ikoma. In addition, the promotion of adult education for park staff will be emphasised during the implementation of the GMP, and options will be investigated for introducing a staff adult education programme.

Target 2.2: Performance and professionalism of SENAPA staff improved

SENAPA management recognises that offering incentives to improve staff effectiveness is only one side of the equation. To complement this, there is a need for an established and enforceable system that clearly sets out the required standards and regulations that must be adhered to by staff and their dependents living within SENAPA.

Currently, the SENAPA staff lack a clear and enforced Code of Conduct to guide rangers in carrying out their activities. Considering that rangers are paramilitary personnel, clear guidelines are critical for ensuring that the basic principles on the use of force and firearms are followed. In addition, the conduct of rangers is important for creating a good example to visitors; firstly, to demonstrate the appropriate behaviour expected within a national park and secondly, as ambassadors for Tanzania tourism in general.

However, the need for guidance and enforcement of professionalism and standards is not restricted to rangers, but applies to all staff and to those dependents living within SENAPA itself. At present SENAPA lacks regulations setting out the obligations of staff, as well as the obligations of SENAPA management to its staff.

This target will be addressed by the following two management actions, as described below.

Action 2.2.1: Disseminate TANAPA Code of Conduct for rangers and ensure compliance

TANAPA Headquarters will take the responsibility for updating and issuing the latest version of the rangers' Code of Conduct. However, the subsequent day-to-day enforcement of this professional code of conduct for rangers will be the responsibility of SENAPA management.

Action 2.2.2: Design and disseminate staff regulations

The issuing of staff regulations will need to be standardised across all national parks, and therefore must also be the responsibility of TANAPA Headquarters. SENAPA management will provide input into the design of these regulations and, once approved, will disseminate to all staff and enforce.

Target 2.3: SENAPA staff establishment strengthened to meet GMP implementation needs

It is the responsibility of the Park Operations Programme to ensure that staffing levels, as per the scheme of service, are established and gaps are filled to effectively implement this GMP. The provisional assessment of these staffing needs will be presented to the TANAPA Headquarters to decide what can be provided for.

Action 2.3.1: SENAPA Community Outreach Department strengthened

The SENAPA Community Outreach Programme for this GMP intends to scale up many of its activities to all the districts surrounding SENAPA, which in turn will require greater man-

power. To coordinate this, the first step will be the recruitment of an Education Community Conservation Advisor to lead the expanded education activities.

Additional SENAPA staff establishment priorities to enable GMP implementation will be agreed upon during the development of Annual Operations Plans and budgets.

Target 2.4: Administrative integration between Fort Ikoma and Seronera improved

The Park Headquarters was moved to Fort Ikoma in 1997 in order to reduce the human impact of having a large (around 2,000) park staff working and living in the centre of the Park at Seronera. In addition, it was felt at the time that having such a large administrative infrastructure in the Seronera Valley detracts from the parks wilderness character and tourism experience; especially considering Seronera is a tourism hub, with the highest density of predators.

The physical impact on Seronera has now been much reduced as only the Tourism Department, some accounts staff and a small support staff together with the Chief Park Warden (CPW) continue to be based at Seronera. In addition, while at Seronera, power supply depends on the use of diesel generators, Fort Ikoma has an opportunity of being serviced by the national gridline from Mugumu and upgraded roads to market centres in the near future.

However, a number of disadvantages of basing operations out of Fort Ikoma have become apparent, especially because Seronera still continues to function as an operation centre at SENAPA. In particular, there are problems in supervision and communication both between and within SENAPA departments, long travel times between Seronera and Fort Ikoma leading to lost working hours and inconvenience, and security and management issues concerning the transportation of cash from revenue collection.

During the implementation of the GMP, SENAPA management will effectively integrate the various functions at Fort Ikoma and Seronera. The management actions to achieve this target are described below.

Action 2.4.1: Carry out a review to determine strategies for enhancing efficiency of administrative functions between Fort Ikoma and Seronera, with special attention to staff working conditions and travel

Even after the Fort Ikoma Headquarters is fully established, SENAPA management will continue to have its presence at Seronera. Therefore solutions need to be found to solving the administrative problems created by having two centres. The starting point for deciding the most appropriate strategies to adopt will be the completion of a comprehensive review of the options available.

Action 2.4.2: Identify and implement ways of improving communications between Fort Ikoma and Seronera

One of the central problems created by the two centres is the difficulty in effective communication between staff and departments. This action will investigate technologies for improving the verbal and written communication systems, as well as reducing the need for costly and time consuming commuting between the centres.

Action 2.4.3: Complete the construction of staff houses and office buildings at Fort Ikoma, to enable administrative activities to be carried out at Fort Ikoma

SENAPA management will prioritise the budgeting of adequate financial resources to enable the completion of the construction of office buildings and staff houses at Fort Ikoma. This will enable the completion of the intended transfer of administration functions out of the Park and will lead to a far more effective division of responsibilities between Fort Ikoma (administration) and Seronera (tourism).

Target 2.5: SENAPA revenue generation improved

The sustainable conservation of SENAPA depends to a greater extent on the revenues generated from tourism, which are then ploughed back into undertaking the necessary conservation activities. In addition, SENAPA must generate revenues not just to fund its park operational costs but also continue to fund operations in other parks that do not generate adequate revenues. In view of this, the optimisation of economic benefits is crucial and a priority for this GMP. Maximization of revenue collection from different sources will also be promoted through tourism diversification (see Tourism Management Programme, Action 4.1.1).

The financial management improvements being implemented by the following management actions, as described below, are all required to adhere to the Procurement Act of 2001 and Financial Policies and Regulations.

Action 2.5.1: Minimise loss of revenues by improving internal controls

To ensure that revenues accrued from tourism are properly collected, recorded and stored, SENAPA management will review its current financial management practices and control systems and staff training requirements, with the view to plugging loopholes for revenue losses. The insurance policy will also be reviewed to reflect the fast changing business environment.

Action 2.5.2: Computerise financial accounts, with written records for back-up

Full computerisation of park accounting is an emerging solution that is being adopted by TANAPA Headquarters to prevent financial mismanagement. At the moment, a computerised accounting system is being developed with an aim to improve collection, documentation and security of revenue from gates and accommodation facilities within SENAPA.

This action will install this electronic accounting system at the Fort Ikoma headquarters, Seronera, and all collection centres.

Action 2.5.3: Investigate new ways of collecting and monitoring revenue

In recent years innovative systems for collecting revenue have been applied to protected areas systems in East Africa and further afield. For example in Kenya, payment of park fees is increasingly being done by a SmartCard system. Under this system visitors are issued with special cards, which must be pre-loaded with an adequate amount of money to cover the entry fees for each park visited (for which a printed receipt is issued). On presenting this card at the park gates, the relevant fees are deducted from the card. Once all the loaded money has been spent, the card can be replenished at a point of sale or "loading" station. This and other systems will be investigated for application within TANAPA protected areas.

In addition, SENAPA management will seek ways to check that all revenues are being properly collected through closer cooperation with tour operators and cross checking gate revenues with receipts at accommodation facilities.

Action 2.5.4: Promote and support a review by TANAPA HQ for increasing the fines and penalties for breaking park rules so as to create a greater deterrence to non-compliance

As shown in Table D.7 in the Tourism Management Programme, every year there are reported visitor offences, such as entering and camping within the Park without paying. At present the fines for those who are caught are very low, at approximately Tshs 12,000, and it is felt that these do not provide a sufficient disincentive to potential offenders. SENAPA management will provide relevant information and advice to TANAPA HQ in reviewing the fining system in favour of penalties that provide effective disincentives. This may not be limited to monetary fines, but also access rights to the Serengeti.

Objective 3: SENAPA infrastructure and service standards improved

The desired future state of SENAPA is one where appropriate and well-maintained infrastructure supports and enables a high standard of services within the Park. These high standards will provide an improved tourism experience and enable increased visitor numbers, whilst not compromising the status of the Park resources and values. The three management targets to achieve this desired state are focused on the road network, water supplies and minimisation of environmental impacts.

Target 3.1: SENAPA road network improved

SENAPA management will keep new road building in SENAPA to a minimum, due to the costs involved and the desire to maintain the wilderness characteristics of the Park. The main management focus for this target is therefore the maintenance of the existing road network, in line with the new GMP Zoning Scheme outlined in Section B. However, if SENAPA management does deem further roads necessary to support expanded tourism opportunities or SENAPA management operations, then a full site-specific environmental impact assessment will be conducted according to the DALP and PEA. In order to meet this management target, the following management actions have been formulated, as described below.

Action 3.1.1: Regularly monitor road wear and tear and carry out necessary maintenance and construction, especially transit roads

An estimated 200,000 visitors travel through the Serengeti every year (see Figure D.2 above). This results in considerable wear and tear on the road network; especially for the transit roads that have to withstand the buses and lorries, as well as the tourist vehicles. It is critical that roads are routinely maintained, because once the condition of a road deteriorates beyond a certain point, restoration becomes extremely costly and labour intensive. The routine maintenance of roads will require the upgrading and purchasing of heavy machinery and equipment.

Action 3.1.2: Remove unmade tracks that are in the High Use Zone, e.g. around the Gol Kopjes

Under the GMP Zoning Scheme (section B), the number, function and spatial extent of the SENAPA zones have been changed from the previous zoning plan, which has implications for the existing road network. This predominantly relates to the areas of the Park that have now been incorporated into the expanded High Use Zone; in particular, to the south east along the Naabi access road. Previously these areas had unmade tracks for game viewing, but now that they are incorporated into the High Use Zone only on-road driving will be permitted. Consequently these unmade tracks will need to be ploughed up and removed from use. This is particularly needed around the heavily visited Gol Kopjes, where there are a number of unmade tracks that tourist vehicles use to move between the various kopjes.

Action 3.1.3: Design and implement a new road construction programme for establishing and maintaining game viewing and anti-poaching tracks and loops in line with the GMP Zoning Scheme and in collaboration with the Tourism and Ecology Departments

The new GMP Zoning Scheme not only requires the removal of roads that no longer comply with the zonal use prescriptions, but also necessitates the appropriate development of tracks and circuits that support the diversification and dispersal of use within the Park. In the Wilderness Zone, the maintenance and construction of access roads to zone edge camps may be required. In the Low and High Use Zones, game viewing tracks and loops may be appropriate for diversifying and dispersing tourist activities.

To guide this development a comprehensive road construction programme will be designed and established, based on the assessment of the environmental impact and the minimum requirements for implementing the Tourism Management Programme and anti-poaching activities of the Resource Protection Department. Wherever possible, the development of tracks will utilise existing disused tracks and where these are not available, new tracks will be constructed on the condition that they meet all the requirements of the DALP/ PEA.

Action 3.1.4: Develop Handajega airstrip as the principal airstrip servicing the western SENAPA tourism lodges and camps

Currently there are four operational airstrips (Seronera, Grumeti, Lobo and Kusini Camp) that are maintained by the Works Department. During this GMP the airstrip at Grumeti will be closed and the Handajega airstrip opened in its place to service the tourism lodges and camps in the western Serengeti. Before opening the Handajega airstrip, SENAPA management will upgrade the airstrip itself as well as the access roads to it, to enable all-year access.

Target 3.2: Reliable and safe water supplies established

Scarcity of freshwater at Seronera is the long-term management issue. The 75km Bologonja pipeline was constructed in the early 1970's from Bologonja springs in the northern-end of the Park to supply water to Seronera. The condition of the pipeline has deteriorated such that water availability is currently sporadic leading to a continuous water shortage in Seronera. SENAPA management has already successfully begun to introduce water-harvesting mechanisms that collect water from the roofs of houses, which is then stored in underground tanks. However, the rainy seasons do not provide sufficient rain for this to adequately solve the water shortage problem at Seronera. In order to achieve year-round water supply, a combination of management actions have been designed that will rehabilitate the Bologonja pipeline,

improve the water harvesting capacity in the Park and identify new potential water sources, as described below.

Action 3.2.1: Carry out feasibility study and scope of work for reconstructing the Bologonja pipeline

The main function of the Bologonja pipeline is to supply freshwater to Seronera and the public campsites. The rehabilitation of this essential pipeline will involve developing a detailed understanding of the problem, an assessment of the potential solutions and the development and approval of a strategy to implement the rehabilitation work.

Action 3.2.2: Reconstruct Bologonja pipeline in line with recommendations and specifications of feasibility study and in collaboration with major pipeline users

The benefits of the Bologonja pipeline are widespread and it is important that all the users of this water are involved and contributing to the pipeline's rehabilitation and ongoing maintenance. This management action will implement the approved strategy for the reconstruction of the pipeline, as identified in the previous action.

Action 3.2.3: Install water harvesting mechanisms in all buildings

Building on the initial success of the water harvesting mechanisms established in Seronera, SENAPA management will scale-up the application of this technology to all buildings, so as to reduce the demand for fresh water supplies from boreholes and the Bologonja pipeline. One of the first priorities will be the eight ranger posts that currently experience regular water shortages. These ranger posts will have high capacity water storage facilities installed with underground tanks.

Action 3.2.4: Carry out hydro-geological survey of the entire Park to identify potential new source of fresh water supply

With the increase in tourist numbers and the escalating off-take of water from the larger catchment, it is clear to SENAPA management that new sources of freshwater need to be identified to service the park facilities. The first step in achieving this will be to carry out a comprehensive hydro-geological survey of the entire Park to identify all the potential sources that could be utilised and the yield that they could sustainably provide.

Action 3.2.5: Carry out a feasibility study for other potential water supplies to service Park and tourism facilities

This management action will carry out a detailed feasibility study of the potential freshwater sources identified by the hydro-geological survey. A set of criteria will be utilised, in line with Tanzanian EIA guidelines (1997), including: cost, environmental impact on the natural resource values of the Park, and practicality for adequately servicing the Park and tourism facilities. This assessment will not be limited to water sources identified within the Park, but will also consider sources that can be utilised from outside. For example, the feasibility of utilising Lake Victoria to supply fresh water to the western corridor lodges and camps will be investigated.

Target 3.3: Environmental impacts of Park developments minimised

The lack of proper waste and pollution management systems is a major concern to SENAPA management; as the existing systems are generally insufficient to cope with the high and increasing level of use. There are a few exceptions, such as the Serena hotel, which has up-

to-date modern waste management systems in place. In response, SENAPA management will assess all existing infrastructure and ensure that proper waste and pollution management systems are installed throughout the Park.

In order to meet this management target, the following management actions have been formulated, as described below.

Action 3.3.1: Manage all infrastructure work-related machines and wastes

Heavy machines and other tools are essential for development and maintenance of infrastructure in the Park. This management action will ensure that all park machinery and equipment is properly maintained and, where necessary, replaced when it is no longer economical to continue with maintenance work. Another aspect of this management action will be to ensure that the waste generated from the maintenance of the equipment, such as oils and greases, is properly and safely disposed.

Action 3.3.2: Carry out site specific EIA/ PEA for all infrastructures

Non-compliance with Tanzanian Environmental Standards and any unplanned developments will not be permitted under this GMP. Based on the Development-Action-Lease Procedures (TANAPA, 1995b) all developments that involve the construction of buildings or roads must be carried out after a report has been made available on the site-specific environmental impact assessment (EIA) and Pragmatic Environmental Assessment (PEA). No development in the Park, by either SENAPA management or private investors, can be carried out without these studies. Once provisional approval has been given for the construction of tourist or staff accommodation facilities, further actions will need to be taken such as, hydrological surveys and the inclusion of water harvesting mechanisms in all buildings.

In addition, an EIA/ PEA will be required for all existing infrastructure, to ensure conformity to environmental standards. The EIA/ PEA will follow the criteria and guidelines established by the National Environment Management Council (NEMC, 1997).

Action 3.3.3: Minimise the impact of mobile phone infrastructure and use on the wilderness character of SENAPA

There has been a proposal to establish a mobile phone network in the Serengeti, with mobile telephone towers located at Naabi Hill Gate, Seronera Lodge and Sopa Lodge. The Institute of Resource Assessment (University of Dar-es-Salaam) carried out an environmental impact assessment (EIA) for Celtel, the communications company, proposing the network installation. The study recommended that the network installation not be allowed to proceed on the basis that there was a substantial negative visual impact from the planned network towers as well as due to a number of other considerations, which included the negative impact of the wilderness experience that the use of mobile phones by visitors or drivers have within the Park. Good mobile phone coverage in the Serengeti would have the negative effect of allowing tour drivers to coordinate themselves around sightings, leading to overcrowding and associated environmental degradation.

The use of mobile phones will be restricted to within accommodation facilities during the period of this GMP as identified in the SENAPA Code of Conduct and by signs at park gates (see Action 1.1.2/3 of Section D). Regarding mobile phone infrastructure, SENAPA management will work with telecommunication operators to reduce the environmental impact of new telecommunications infrastructure, for example, by locating at existing telecommunication sites.

Action 3.3.4: Monitor and regulate park transit traffic

A number of approaches will be adopted under this management action in order to ensure that the transit traffic passing through the Serengeti conforms to the SENAPA regulations and Code of Conduct (Action 1.1.2 of Section D). This will include the implementation of a pilot scheme for posting park staff on buses and other transit vehicles in order to monitor driving and raise awareness of the Code of Conduct. However, it will only be possible to monitor a small proportion of transit vehicles through this pilot scheme. In order to provide a more comprehensive check on compliance to park regulations, actions will be taken to penalise against speeding and exceeding the weight limit. To monitor this, weighbridges will be introduced to randomly measure the weight of transit vehicles and the time taken to pass through permissible routes will be recorded for all transit traffic. Those vehicles found to be speeding or overweight will be penalised. Certain routes, such as through the Western Corridor, will not be permissible for transit traffic. Consequently, supply vehicles for lodges and camps to these areas will have to come and go by the same route.

Objective 4: Local, national and international collaboration in the long-term conservation and management of the Serengeti National Park and wider ecosystem strengthened

The desired future state of SENAPA is one where the full spectrum of stakeholders within the broader ecosystem is coordinated and effectively working together to ensure the long-term conservation of SENAPA and the broader ecosystem upon which it functions. The role of SENAPA management will have been central in instigating and coordinating this cooperation. The management target to achieve this desired state will focus on forming national and international partnerships and exchange programmes.

Target 4.1: Stakeholder collaboration and partnerships established and strengthened

The broader Serengeti ecosystem is substantially protected by SENAPA, which covers about 59 per cent of the area of the ecosystem. However, SENAPA cannot be managed in isolation and a healthy SENAPA is very much contingent on the sustainable and coordinated management of all the areas within the broader ecosystem. Therefore SENAPA management will work to establish and strengthen collaboration and partnerships between and among key stakeholders.

SENAPA management already has a good history of forming partnerships with local and regional institutions. For instance, SENAPA management collaborates closely with all sister institutions surrounding the Park, the Zonal Anti-poaching Unit at Bunda, district authorities, local communities, private initiatives, researchers, and the Masai Mara National Reserve in Kenya. In addition, the international importance of the Serengeti, as an UNESCO Biosphere Reserve and World Heritage Site, has facilitated the establishment of partnerships at the international level; for example with Yellowstone National Park in the USA and with international non-governmental organizations (NGOs). One such NGO is the Frankfurt Zoological Society (FZS), which is based in Seronera and has for many years been a strong conservation management partner of SENAPA and surrounding protected areas.

In order to achieve this target, two management actions have been formulated and are described below.

Action 4.1.1: Build stakeholder collaboration both within and outside the country

This GMP encourages the involvement of different stakeholders from the local, national, regional and international levels. This management action will focus on strengthening the existing collaborative mechanisms and establishing new partnerships in order to create synergies in the sustainable management of the broader Serengeti ecosystem. This will include all the key stakeholders within the Tanzania component of the ecosystem and a selection of up to five key stakeholders from outside.

Action 4.1.2: Develop exchange programmes with other protected areas

Transboundary issues have become an increasingly central focus of global biodiversity conservation and the broader Serengeti ecosystem has a number of pressing issues between Kenya and Tanzania that will need to be addressed during the GMP. In particular, these relate to the wildebeest migration and the Mara River catchment that spans the two countries. SENAPA management recognises the importance of increasing the level of cooperation with the Kenya side of the ecosystem and this will be a focus of this management action.

The need to share knowledge and experiences to better understand and apply global best practices for addressing conservation challenges currently facing protected areas will also be an important focus of this management action. To achieve this, exchange programmes will continue to be established and developed with other protected areas. Already there exists an exchange visit programme between the Serengeti and Yellowstone National Park in North America. This exchange will be continued and options will be investigated for developing new exchanges with other protected areas.

The detailed 3-Year Action Plan addressing these four objectives is outlined in Table G.5 of Section G.

Mitigation of environmental impacts of major Park Operations Programme actions

The potential negative environmental impacts of the major Park Operations Programme actions and proposed mitigating measures to reduce, eliminate or offset adverse affects are highlighted in Table F.4 below.

Table F.4: Mitigation measures for major Park Operations Programme actions

Major action	Potential negative impact	Mitigation measure
3.1.1: Regularly monitor road wear and tear and carry out necessary maintenance and construction	Noise pollution from construction work disturbing animals, birds or insects	▸ All construction road works should be done during the normal working hours of the day
	Contamination of soils and river systems from oil and diesel spills	▸ Oils should be properly stored and safely disposed of outside of the Park
3.1.2: Remove unmade tracks in the High Use Zone	Rehabilitation of the de-commissioned tracks does not occur	▸ The entrance to de-commissioned tracks must be effectively blocked and clearly sign-posted to prevent any inadvertent vehicle access ▸ Transverse berms should be con-

		▸ structed at suitable intervals to inhibit water flow and erosion ▸ Regular monitoring should be carried out to check the rehabilitation methods are successful and adapt methods should it be necessary
3.2.2: Reconstruct Bologonja pipeline in collaboration with major pipeline users	The water extraction from the reconstructed pipeline is unsustainable	▸ The flow rates of effected watercourses should be established (and/or recharge rates of underground resources) ▸ Leak detection systems should be installed to facilitate future maintenance

The specific Programme actions that will require a detailed Action/ Development Site Specific EIA[6] prior to implementation are:

▸ Design and implementation of a new road construction programme for establishing and maintaining game viewing and anti-poaching tracks and loops (Action 3.1.3)
▸ Develop Handajega airstrip as the principal airstrip servicing western SENAPA (Action 3.1.4)

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[6] Guidelines and document format are provided in the TANAPA (1994b) as well as the TANAPA Strategic Planning Manual (1995a)

3-YEAR ACTION PLAN
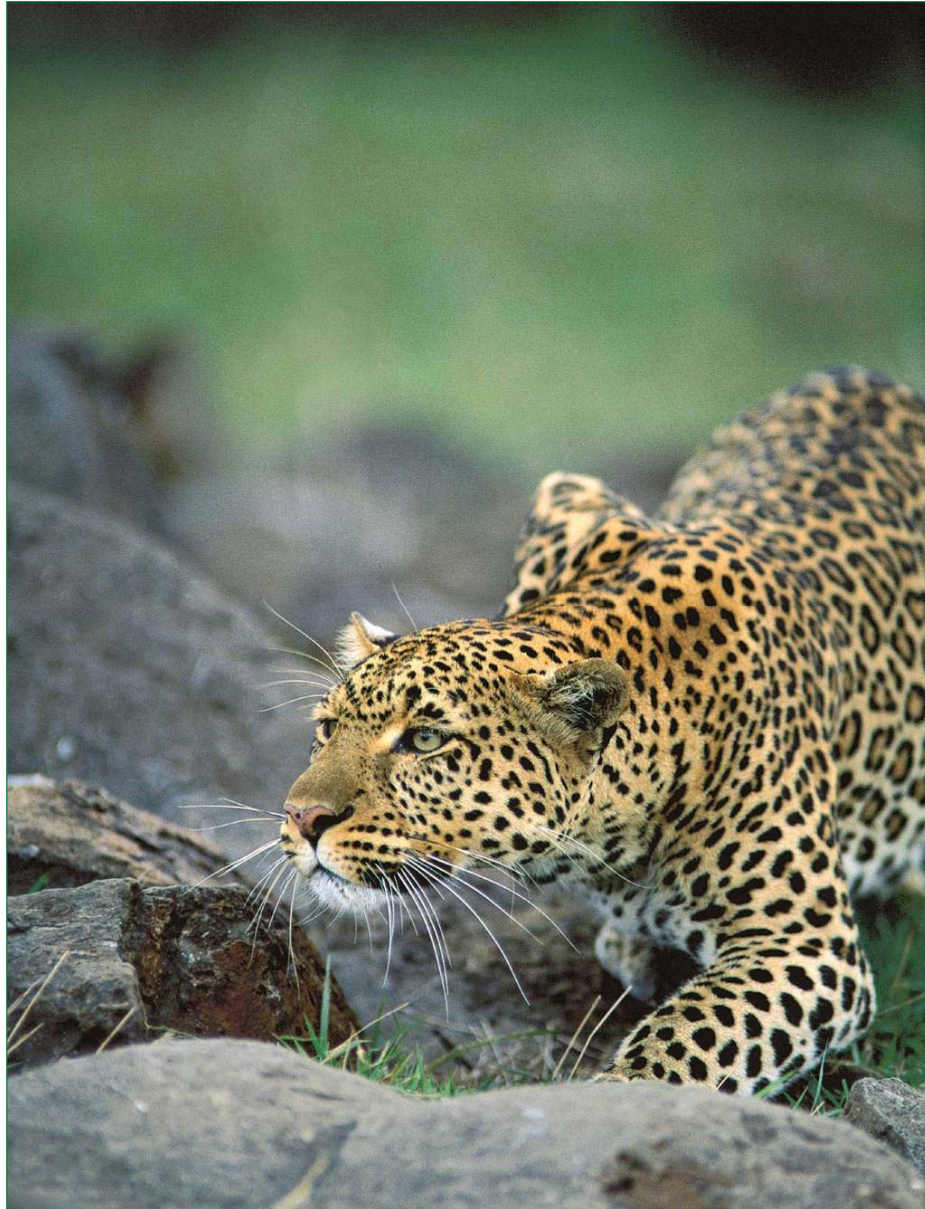
General Management Plans typically define the long–term vision for a national park but often fail to provide practical and concrete actions to undertake in the short-term to achieve this vision. To address this need, 3-year Action Plans have been established for each of the four GMP Management Programmes to provide a guide for those who manage SENAPA on a daily basis.

Each Action Plan is organised by Programme Objectives and Management Targets to ensure that they are clearly linked to the GMP's 10-year strategic framework (see Sections C-F above). The 10-year **Management Actions** from the GMP's strategic framework provide the high-level actions to be implemented on a day-to-day basis. It is expected that good progress will be made in implementing these actions under the initial 3-year Action Plans, however, it is intended that many of the actions will be rolled forward for completion in the subsequent Action Plans for this GMP. Where appropriate, each action has been broken down into a series of **3-year Activities** to facilitate the action's implementation and to aid their incorporation into the Park's Annual Operations Plans.

This section provides the initial 3-year Action Plans for each of the four management programmes, with the timeframe on which Management Actions and Activities will occur, the necessary input requirements and the allocation of responsibility for implementation.

Table G.1: Abbreviations used in Action Plan allocation of responsibility

Action Plan Abbreviation	Details
ADM	Administrative Manager - SENAPA
AI	Accountant In-charge - SENAPA
BI	Building Inspector - SENAPA
CCE	Chief Civil Engineer - TANAPA HQ
CPW	Chief Park Warden - SENAPA
ME	Mechanical Engineer - SENAPA
MEM	Manager Ecological Monitoring - TANAPA HQ
OPM	Outreach Programme Manager - TANAPA HQ
PE	Park Ecologist - SENAPA
RI	Road Inspector - SENAPA
TATO	Tanzania Association of Tour Operators
VO	Veterinary Officer - SENAPA
WO	Warden Outreach - SENAPA
WP	Warden Protection - SENAPA
WT	Warden Tourism
ZPW	Zonal Park Warden - SENAPA

Table G.2: Ecosystem Management Action Plan

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
Objective 1: SENAPA Conservation Targets enhanced and threats reduced															
1.1 Human impacts threatening the Migration minimised	**1.1.1: Conduct research to better understand the Migration movements, population dynamics and disease prevalence**														
	1.1.1.1: Collaborate with TAWIRI to carry out applied research on migration movements and population dynamics	Avgas, night out allowances, battery for GPS	PE	X			X	X				X			
	1.1.1.2: Carry out routine serum sampling of captured animals and test for disease	Laboratory charges, transport, allowances, drugs, sampling materials	VO		X	X	X	X	X	X	X	X	X	X	X
	1.1.2: Support the Resource Protection Department to protect the Migration against poaching and human encroachments (see also Park Operations Programme Target 1.1)														
	1.1.2.1: Collaborate with the Resource Protection Department in carrying out mobile anti-poaching operations in key months (June-July)	Fuel, transport, allowances	WP	X				X				X			
	1.1.2.2: Collaborate with the Resource Protection Department and Community Outreach Department in improving demarcation of Park boundaries in key areas (See also Park Operations Programme Action 1.1.6)	Man hours, fuel, allowances	PE, WO, WP												

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.1.3: Advocate and collaborate with partners for the protection of migration routes in the Greater Serengeti Ecosystem														
	1.1.3.1: Advocate for the protection of migration routes using the monitoring information collected on poaching and human population settlement, cultivation and livestock (see Ecological Monitoring Plan indicators under Conservation Target 1, in section C)	Media cost, stationary, phone calls	CPW												
	1.1.3.2: Organise and participate in efforts to bring about collaboration in conservation and management of the Greater Serengeti Ecosystem	Fuel, transport, Phone calls, Stationary, allowances	CPW												
	1.1.4: Investigate options for minimising the environmental impact of tourism migration viewing														
1.2 Human impacts on the Mara River monitored and minimised	**1.2.1: Raise awareness on issues affecting the Mara River and advocate for catchment-wide responses at international forums**														
	1.2.1.1: Present information based on the monitoring of the Mara River flow and water quality (see Ecological Monitoring Plan indicators for Conservation Target 2)	Fuel, transport, allowances, stationary	PE												
	1.2.1.2: Advocate for catchment-wide response based on monitoring information and changes to land use and economic development in both Tanzania and Kenya	Phone calls, fuels	MEM												
	1.2.2: Promote and participate in international collaboration concerning Mara River management	Fuel, phone calls, stationary	MEM, TANAPA HQ												
1.3 Fire extent, frequency and intensity within key habitats managed	**1.3.1: Prioritise critical habitats and areas for fire protection within the Riverine forest, Acacia woodland, Terminalia woodland and Kopje habitat**	Fuel, transport, allowances	PE, WP												
	1.3.2: Identify and preserve adequate areas of dry season forage for migrant species	Fuel, allowances	PE, WP												

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.3.3: Implement fire management measures as per SENAPA Fire Management Plan	Fuel, allowances	PE, WP												
1.4 Viable populations of Black rhino restored to the Serengeti	**1.4.1: Protect existing rhino populations from poaching threats (see also Park Operations Programme Target 1.1)**	Fuel, allowances	WP												
	1.4.2: Minimise tourism disturbance to Black rhinos														
	1.4.2.1:Raise driver and visitor awareness of rhino disturbance issues, with reference to the Tourism Code of Conduct (see also Tourism Management Programme Action 1.1.2)	Phone calls, fuel	WT												
	1.4.2.2: Control visitor access in the rhino area, especially to the core area away from the game viewing trails	Fuel, allowances	WP												
	1.4.3: Design and implement a scheme for the re-introduction of Black rhinos to SENAPA														
	1.4.3.1: Obtain the genetic information relating to the existing populations	Fuel, allowances	MEM						▓			▓			
	1.4.3.2: Determine and prioritise suitable key areas for re-introduction of rhinos to SENAPA	Fuel, allowances	PE		▓										
	1.4.3.3: Create and supplement new populations at identified sites	Fuel, allowances	MEM							▓				▓	
1.5 Viable populations of Wild dogs restored to the Serengeti	**1.5.1: Collaborate with TAWIRI, NCAA, communities and others to understand the status of Wild dogs in the entire ecosystem**	Fuel, phone calls, stationary	CPW	▓				▓							
	1.5.2: Support efforts to reduce threats to the natural re-introduction of Wild dogs to SENAPA														

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.5.2.1: Support efforts to control rabies and canine distemper in domestic dog populations to reduce the threat of disease	Vaccine, allowances, transport, relevant materials	VO				▉				▉				▉
	1.5.2.2: Based on outputs of Action 1.5.1, support efforts to reduce verified human-Wild dog conflicts, in collaboration with the HWC mitigations of the Outreach Department (see also Community Outreach Programme Action 1.2.3)	Fuel, phone calls, stationary	WP, WO					▉				▉			
	1.5.3: Explore the potential and practicalities for the re-introduction of Wild dogs into SENAPA														
	1.5.3.1: Identify possibilities for re-introduction of Wild dogs in the Serengeti, including minimal numbers for re-introduction	Fuel, allowances	PE, VO									▉			
	1.5.3.2: Understand status of other carnivores in potential priority re-introduction sites, to better understand predator competition threat	Transport, fuel, allowances	PE, VO												
	1.5.3.3: Identify possible populations that can serve as source populations for re-introductions, especially populations that are currently under threat	Fuel, allowances	MEM									▉			

Table G.3: Tourism Management Action Plan

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
Objective 1: Visitor access and use developed and enhanced in environmentally appropriate and sustainable ways															
1.1 Disturbance of key habitats, wild-life populations and other exceptional resources minimised	**1.1.1: Implement zonal and park-wide prescriptions to regulate visitor use and impact**														
	1.1.1.1: Implement guidelines on the use of deadwood for heating and cooking (draft under development by TATO)	Man hours, allowances	TANAPA HQ												
	1.1.1.2: Carry out awareness raising with park staff, tour operators and drivers on new zoning boundaries and prescriptions	Booklets, Brochures, maps, Phone calls, fuel	WT		X	X		X	X			X	X		
	1.1.1.3: Collaborate with tour operators in carrying out driver and guide training on the Zoning Scheme (focusing initially on Wilderness Zone users)	Phone calls/ fax, fuel, allowances, man hours	WT		X				X				X		
	1.1.2: Implement a Code of Conduct for tour operators and visitors														
	1.1.2.1: Publish SENAPA Code of Conduct in user-friendly format	Stationary, fuel, phone/fax	CPW, WT	X				X				X			
	1.1.2.2: Carry out training for park staff, tour operators and drivers in the Code of Conduct and the requirement that they set an example to visitors	Stationary, man hours	TANAPA HQ, CPW			X			X						
	1.1.3: Produce and widely disseminate information explaining the Zoning Scheme and Code of Conduct														

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.1.3.1: Produce a poster on the Zoning Scheme and Code of Conduct for display at park gates and lodges	Stationary, allowances, fuel, production charges	WT					▓		▓					
	1.1.3.2: Produce and distribute a leaflet explaining the Zoning Scheme and Code of Conduct to visitors and drivers (in English and Swahili)	Stationary, fuel, transport	WT		▓				▓				▓		▓
	1.1.3.3: Collaborate with tour operators to ensure that the Zoning Scheme and Code of Conduct leaflet reaches clients (e.g. in information packs)	Phone calls/ fax, stationary, allowances	WT					▓	▓	▓	▓	▓	▓	▓	▓
	1.1.3.4: Ensure that the Zoning Scheme and Code of Conduct are incorporated in updated versions of park guides	Communication facilities	TANAPA HQ												▓
1.2 Tourism access and use diversified in appropriate ways, in order to expand SENAPA tourism attractions and minimise over-use of existing attractions	**1.2.1: Identify and establish a broad spread of tourism sinks in the High and Low Use Zones**														
	1.2.1.1: Carry out a survey with TATO and concession holders of possible tourism sinks within SENAPA, with recommendations on how to develop an optimal number of facilities according to zonal LAU and projected future tourism numbers	Fuel, allowances, phone calls/fax	WT, PE	▓				▓				▓			
	1.2.1.2: Consult with special interest groups (e.g. birders) regarding possible sites	Phone calls/fax, E-mails, fuel, allowances	WT		▓				▓				▓		
	1.2.1.3: Develop access and interpretation facilities at selected sites	Fuel, allowances, display materials, man hours	WT		▓				▓				▓		

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.2.1.4: Carry out a detailed feasibility study of sinks with special development needs (e.g. aerial walkway along Grumeti River, etc.)	Fuel, allowances, phonecalls	WT, PE						X				X		
	1.2.1.5: Develop cultural and historical sites as tourism sinks as appropriate	Fuel, allowances, man hours	WT		X			X							
	1.2.1.6: Seek development funding (internal TANAPA and donor) for tourism sinks with special development needs and implement	Phone calls/fax, E-mails	WT	X				X				X			
1.2.2: Develop overnight walking safaris in the Wilderness Zone according to the Limits of Acceptable Use															
	1.2.2.1: Raise internal understanding and disseminate TANAPA Walking Safari Guidelines within SENAPA and eligible tour operators	Man hours, fuel, allowances	TANAPA, WT					X	X	X	X	X	X	X	X
	1.2.2.2: Approve Walking Safari Operators and guides in accordance with TANAPA Walking Safari Guidelines	Stationary	TANAPA						X						
	1.2.2.3: Implement safety regulations and ensure that Walking Safari Operators are aware of these	Fuel, phonecalls/fax, stationary, allowances	WT					X	X	X	X	X	X	X	X
	1.2.2.4: Ground truth and designate walking safari blocks, with the walking route and camping locations defined, in collaboration with TATO and the Resource Protection Department	Fuel, transport, allowances phonecall, fax	WP, WT, PE	X											
	1.2.2.5: Develop an infrastructure of short, dead-end access roads into the Wilderness Zone for camping locations	Fuel, allowances,	RI, WT, PE	X					X						
	1.2.2.6: Implement a one-year pilot scheme for walking safaris in designated blocks and evaluate the success	Fuel, ranger guide, 1st aid kit	WT, PE, WP						X	X	X				
1.2.3: Develop short interpretive trail walks from designated points, as appropriate															

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.2.3.1: Determine appropriate areas as part of survey of possible tourism sinks (see Activity 1.2.1.1)	Fuel, GPS, meal allowance	WT, RI, PE, WP	■											
	1.2.3.2: Set operational parameters and booking systems in line with TANAPA Walking Safari Guidelines	Fax/phone calls	TANAPA HQ, WT					■	■	■					
	1.2.4: Designate a new ballooning concession in the Western Corridor				■	■									
	1.2.5: Implement off-road driving pilot scheme in Low Use Zone														
	1.2.5.1: Designate areas for off-road driving within the Low Use Zone	Fuel, phonecalls, E-mail allowances	WT, PE		■				■				■		
	1.2.5.2: Assess impact of off-road driving	Fuel, man hours, stationary	CPW, WT,	■				■				■			
Objective 2: SENAPA visitor facilities improved in order to provide an optimal tourism experience with minimal environmental impact															
2.1 Visitor facilities improved and expanded in close consultation and collaboration with the tourism industry, especially those catering for local tourists and alternative tourism activities	**2.1.1: Upgrade existing park infrastructure, in particular regarding water supply and sanitation (see also Park Operations Programme Target 3.2)**														
	2.1.1.1: Implement appropriate and cost effective water supply infrastructure developments, in collaboration with relevant water users	Fuel, Equipment	TANAPA HQ, BI, ME, WT	■	■	■	■	■	■	■	■	■	■	■	■

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	2.1.1.2: Review the status of existing Park facilities, and identify improvement needs in line with visitor expectations (including the toilets at Seronera Visitor Centre)	Fuel, allowances, phone calls/fax	WT, BI,	■				■				■			
	2.1.1.3: Carry out identified improvements	Equipment, man hours, allowances	WT, BI,		■										
	2.1.1.4: Implement new environmentally-friendly pit latrines for Seronera campsites, and expand to further park sites if successful	Equipment	WT, BI,						■						
	2.1.1.5: Rehabilitate all public campsites to accommodate seasonal peak numbers, subject to availability of adequate water supply	Fuel, allowances, equipment	WT, BI,	■				■				■			
	2.1.2: Implement Limits of Acceptable Use for accommodation in the High and Low Use Zones														
	2.1.2.1: Locate and develop new Special Campsites within the High and Low Use Zones	Fuel, phonecalls	WT, RI, PE, TA-NAPA HQ							■	■			■	
	2.1.2.2: Develop new public campsites at Bologonja and Handajega	Fuel, equipment	WT, RI, PE, BI	■								■			
	2.1.3: Sensitise and encourage private tour operators and investors to provide accommodation to Tanzanian citizens at affordable rates	Communication facilities, fuel, transport	CPW, WT		■										
	2.1.4: Implement revised system for Special Campsite management														
	2.1.5.1: Review systems for maintaining hygiene and sanitation of Special Campsites and implement necessary improvements, including spot-fining system for offending operators	Fuel, fax/phonecalls, stationary	WT	■	■	■	■	■	■	■	■	■	■	■	■

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	2.1.5.2: Undertake a regular programme of Special Campsite review and assessment of environmental impact, with provision for closing special campsites requiring rehabilitation (e.g. Ndutu)	Fuel	PE, WT	█	█	█		█	█	█		█	█	█	
	2.1.5: Review existing concession arrangements (as part of wider TANAPA corporate review of concessions)	Phonecalls/fax	TANAPA HQ				█				█				█
2.2 Systems for monitoring and regulating the environmental impacts of tourism facilities designed and established	**2.2.1: Ensure implementation of DALP environmental impact guidelines for all new facilities**		PE							█					█
	2.2.2: Establish environmental impact standards (including waste, water and fuelwood management) for SENAPA tourism facilities and a system of incentives and penalties to ensure compliance	Fuel, fax/phonecalls, stationary	PE, WT	█	█			█	█			█	█		
	2.2.2.1: Work with existing and new concessionaires to enable environmental standards to be continuously attained	Fuel, phonecalls	WT, PE	█	█	█	█	█	█	█	█	█	█	█	█
	2.2.2.2: Develop a system for self evaluation enabling concessionaires to monitor achievement of environmental standards	Fuel, fax/phonecalls, stationary	WT, PE	█	█			█	█			█	█		
	2.2.2.3: Incorporate appropriate environmental standards and penalties in all new and existing concession agreements (see Action 2.1.5)	Fax/phone calls	TANAPA HQ,				█				█				█
	2.2.3: Advocate for restrictions on aircraft noise pollution over SENAPA that severely impacts on the wilderness values of the Park		TANAPA HQ					█				█			

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
Objective 3: SENAPA interpretive centres and materials are high quality, relevant, informative and educational															
3.1 An improved and expanded network of SENAPA visitor interpretation facilities developed	**3.1.1: Develop interpretation facilities at Ndabaka, Naabi and Handajega in line with the existing Visitor Interpretation Plan, and available funding**	Equipment, fuel, building infra-structures	WT				X				X				X
	3.1.2: Develop mini-interpretation sites and high quality interpretation leaflets for selected tourism sinks	Fuel, stationary, allowances, equipment	WT, BI							X			X		
	3.1.3: Develop information displays/ leaflets at SENAPA lodges, Park Gates and research centres	Fuel allowances	WT			X				X					
	3.1.4: Provide appropriate short-course training to strengthen interpretational capacity of assistant tourism officers	Allowances	TANAPA HQ			X					X		X		
3.2 Supply of visitor information materials improved	**3.2.1: Work with TANAPA Desk Top Publishing Unit and technical advisors to develop a standard branding for SENAPA information and interpretation materials and signs**														
	3.2.1.1: Prepare and print appropriate materials	Office machines, allowances	TANAPA HQ, WT		X				X				X		
	3.2.1.2: Outsource production of guidebooks and maps unsuitable for in-house production	Communication facilities	TANAPA HQ, WT						X				X		
	3.2.1.3: Ensure that all major road junctions have appropriate signs	Man hours, allowances, materials & equipment	WT, BI	X	X	X						X			
	3.2.2: Design essential and simple information materials describing key Park attractions suitable for free distribution to all visitors	Stationary, office machines	WT	X	X	X									

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	3.2.3: Ensure the wider dissemination of information about the Serengeti														
	3.2.3.1: Ensure wide dissemination of information materials at outlets inside and outside SENAPA	Transport, allowance, media, stationary	WT		X				X				X		
	3.2.3.2: Update and improve www.serengeti.org website to improve availability of downloadable park visitor information, including links to other TANAPA and relevant sites	Funds, stationary,	FZS	X		X		X		X		X		X	
	3.2.3.3: Collaborate with TANAPA HQ in activities to promote SENAPA as a tourist destination nationally and internationally	Communication facilities, stationary, allowances	TANAPA HQ, WT		X				X				X		
	3.2.3.4: Circulate detailed digitised SENAPA map to Tour Operators and Researchers to check and verify	Transport, fuel, production fund	GIS consultant	X											
Objective 4: Tourism management improved in collaboration with tourism industry partners																
4.1 SENAPA tourism administration & information systems strengthened in order to provide park managers with timely and accurate information on visitor numbers, tourism impacts, and revenue generation	**4.1.1: Develop computerised visitor management system (see also Park Operations Programme Target 2.5)**	Equipment, stationary, man hours, allowances	TANAPA HQ, WT, AI		X				X						
	4.1.2: Develop an anonymous incident report form for distribution at SENAPA gates	Stationary, fuel, transport	WT		X										
	4.1.3: Develop an enhanced spatial system for monitoring visitor use of park zones and key habitats, including seasonal data														
	4.1.3.1: Develop simple ways of measuring visitor use of key sites, including turnstiles (Seronera VC), vehicle counter strips, and simple record keeping by park staff	Transport, allowance, fuel, stationary	WT, ZPW		X	X	X	X	X	X	X	X	X	X	X

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	4.1.3.2: Develop simple mechanisms for asking visitor opinions on key Serengeti attractions (e.g. touchscreen and paper questionnaires at entrance gates)	Stationary, transport, fuel	WT					X		X		X		X	
	4.1.3.3: Develop simple ways of analysing visitor use data	Stationary, man hours	WT					X	X	X		X			X
	4.1.3.4: Conduct annual visitor surveys using random sampling techniques	Stationary, man hours	WT, WP			X			X	X				X	
	4.1.4: Update and implement booking systems and fees for safari walking and Special Campsites														
	4.1.4.1: Establish walking safari booking systems and fees according to the Wilderness Zone prescriptions	Communication facilities, stationary	TANAPA HQ, WT					X	X	X	X	X	X	X	X
	4.1.4.2: Revise walking safari booking system and fees following implementation of one-year pilot scheme (see Activity 1.2.2.6)	Communication facilities	TANAPA HQ, WT												
	4.1.4.3: Revise the Special Campsite booking period, deposit and refund policy as part of a wider TANAPA HQ review	Communication facilities	TANAPA HQ		X	X									
	4.1.4.4: Establish a tailor-made and transparent booking system and fee structure for Premium Campsites, in consultation with TATO	Communication facilities	TANAPA HQ, WT		X										
	4.1.4.5: Investigate innovative ways for revenue collection and online booking, including the role of the private sector	Communication facilities, fuel	TANAPA HQ,	X											

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
4.2 Mechanisms developed for strengthening communication and cooperation between tourism industry partners and SENAPA management	**4.2.1: Establish park management and tourism operator communication mechanisms**														
	4.2.1.1: Participate/contribute to TATO-TANAPA liaison meetings held three times a year	Phonecalls/fax, e-mail	TANAPA HQ, WT		X		X		X		X		X		X
	4.2.1.2: Hold twice yearly meetings with SENAPA concession holders in Serengeti	Fuel, phone-calls/fax	WT		X		X		X		X		X		X
	4.2.1.3: Hold twice-yearly Tour Driver-Management Meeting (possibility of TATO organising one of these meetings in early December in Arusha for all northern parks)	Stationary, transport, fuel, allowances	TANAPA HQ, CPW, WT		X		X		X		X		X		X
	4.2.1.4: Collaborate with TATO in organising annual Tour Operators Meeting in Arusha, linked to Tour Driver-Management Meeting	Phone calls, fax, allowances	TANAPA HQ, CPW, WT				X				X				X
	4.2.2: Promote and provide inputs into the development of a national driver/ guide accreditation system	Stationary, allowances, transport, fuel	TANAPA HQ, TATO, CPW, WT				X	X	X	X	X	X	X	X	X

Table G.4: Community Outreach Action Plan

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
Objective 1: Neighbouring community and local government support for conservation strengthened															
1.1 Park-community cooperation, communication and conflict resolution mechanisms enhanced	**1.1.1: Enhance the two-way flow of information between park and communities**														
	1.1.1.1: Facilitate and participate in district development coordination meetings	Allowances, fuel	WO	▓	▓	▓	▓								
	1.1.1.2: Initiate community conservation coordination committee for all stakeholders, including private initiatives and NGOs active in the Ecosystem	Fuel, allowances, stationery	WO,								▓				
	1.1.1.3: Organise annual community stakeholders meeting	Fuel, allowances, stationery	WO								▓				
	1.1.1.4: Disseminate departmental reports/newsletters	Stationary	WO	▓	▓	▓	▓								
	1.1.2: Evaluate the effectiveness of SENAPA outreach activities in collaboration with community and district representatives														
	1.1.2.1: Collate background/historical information on community attitudes to park	Allowances, stationary, staff time	WO	▓											
	1.1.2.2 Collect baseline KAP (knowledge, attitudes and practices) information in areas where SENAPA Outreach Department has not previously been active	Allowances, transport facilities, stationary	WO		▓										
	1.1.2.3: Resurvey for KAP in areas previously surveyed	Allowances, transport facilities, stationary	WO			▓									
	1.1.2.4 Compare current KAP with historical information	Man hours	WO				▓								

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.1.3: Carry out training on communication and conflict resolution to improve community liaison skills of rangers and wardens	Allowances, stationary, fuel	WP, WO,					▉							
	1.1.4: Improve SCIP planning mechanisms with communities and districts														
	1.1.4.1: Disseminate TANAPA SCIP guidelines to relevant partner communities	Allowances, stationary	OPM, WO	▉	▉	▉	▉	▉	▉	▉	▉	▉	▉	▉	▉
	1.1.4.2: Review and where necessary revise the broad areas of interest for prioritising SCIP activities, related to the evaluation of outreach activities (see Action 1.1.2), ecosystem conservation priorities, and known community development priorities	Transport, allowances	OPM		▉	▉			▉			▉			
	1.1.4.3: Prioritise target areas for SCIP initiatives, taking account of community population dynamics and the need to reward communities that are cooperating with SENAPA in resource protection	Man hours, transport, allowances	WP, WO,					▉							
	1.1.4.4: Hold meetings to define and review community priorities, with an emphasis on inclusion and addressing needs of marginalised community members (see Action 1.1.1.2)	Transport, allowances, stationary	WO												
	1.1.4.5: Provide training and support to communities in preparing simple project proposals for potential SCIP support	Transport, allowances, stationary	WO					▉	▉						
	1.1.4.6: Monitor the impact of SCIP initiatives on encouraging immigration into park-adjacent areas, and adapt programme if necessary	Transport, allowances, stationary	WO									▉			

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
1.2 Community benefits from SENAPA enhanced and costs reduced	**1.2.1: Implement priority community initiated projects as identified in planning (see Action 1.1.4)**														
	1.2.1.1: Agree with relevant communities on activities to be implemented, division of responsibilities, and timeframes	Transport, allowances	WO	▓				▓				▓			
	1.2.1.2: Liaison with and involve district authorities in project implementation as appropriate	Transport, allowances	WO	▓				▓				▓			
	1.2.1.3: Establish strong linkages between park-supported development projects and conservation, for example through appropriate signage on park-supported buildings, and awareness events associated with the completion of facilities	Transport, allowances	CPW, OPM, WO												
	1.2.2: Provide support for conservation-friendly income generating activities														
	1.2.2.1: Support a study to identify local products (e.g. handicrafts and fresh produce) that have market potential, especially linked to SENAPA and local tourist outlets	Transport, stationary, allowances	WO												
	1.2.2.2: Identify and where appropriate help establish community self-help groups for undertaking income generating activities	Transport, allowances, stationary	WO												
	1.2.2.3: Facilitate groups to identify small-scale conservation-compatible income-generating opportunities, in line with Activity 1.2.2.1	Soft loans	OPM												
	1.2.2.4: Provide training and support for establishing IGAs	Transport, allowances, stationary	WO												

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.2.2.5: Assist communities in linking with appropriate markets, especially within SENAPA	Transport, allowances, stationary	WO	■	■	■	■	■	■	■	■	■	■	■	■
	1.2.2.6: Where identified as a priority, extend current initiatives to facilitate bee-keeping in community forests	Transport, allowances, stationary	WO					■							
	1.2.2.7: Monitor and evaluate success and sustainability of supported IGAs, and adapt IGA support according to lessons learnt	Transport, allowances, stationary	WO									■			
	1.2.3: Assist communities in mitigating human-wildlife conflicts														
	1.2.3.1: Initiate and facilitate a study to quantify livelihood costs from human-wildlife conflict incidences	Transport, man hours, stationary	WO										■		
	1.2.3.2: Develop a standardised protocol for recording HWC incidences, in collaboration with ecosystem stakeholders	Stationary, man hours	WO										■		
	1.2.3.3: Provide training and support to communities to test and implement appropriate mitigation techniques	Transport, allowances, stationary	WO, WP											■	
	1.2.3.4: Support villages and districts with Problem Animal Control when requested, in collaboration with SENAPA Resource Protection staff (see Park Operations Programme Target 1.1)	Transport, ammunition, man hours, allowances	WP, WO	■	■	■	■	■	■	■	■	■	■	■	■
	1.2.4: Promote the employment of local people by park stakeholders														
	1.2.4.1: Liaise with other SENAPA departments to identify suitable opportunities for unskilled workers drawn from local communities	Allowances	ADM	■	■	■	■	■	■	■	■	■	■	■	■

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.2.4.2: Liaise with tour operators and other SENAPA stakeholders to identify ways of increasing local community employment opportunities	Transport, allowances	WT, WO												
	1.2.4.3: Raise awareness of suitable job opportunities in local communities	Transport, allowances	WT, WO												
1.3 Conservation education programme improved and expanded to be more accessible and relevant to local needs	**1.3.1: Improve the scope and content of education materials**														
	1.3.1.1: Liase with relevant conservation organisations, e.g. the WWF TCO Education Programme, to identify sources of already-available and appropriate educational materials	Stationary/books	WO	█	█	█	█	█	█	█	█	█	█	█	█
	1.3.1.2: Re-establish desktop publishing capacity in SENAPA, in collaboration with TANAPA Desktop Publishing Unit	Publishing equipment and stationery, allowances	WO, Planning Manager from TANAPA HQ	█											
	1.3.1.3: Prepare new materials and adapt existing materials	Stationary	Conservation Education unit	█	█										
	1.3.1.4: Improve and update audio-visual equipment, as per current identified needs and for Activity 1.3.2.2	Audio and visual equipment	WO	█		█		█		█		█			
	1.3.2: Scale-up education programme to all park-adjacent districts														
	1.3.2.1: Liaise with district education and extension staff to plan out how to introduce conservation education in targeted districts, particularly through schools and adult education opportunities	Allowances, transport, stationary	WO					█							
	1.3.2.2: Develop a realistic plan for gradually expanding education and awareness activities in key locations surrounding the park, based on available human resources and funding and linked to priority areas revealed through KAP surveys carried out under Action 1.1.2	Allowances, transport, stationary	WO					█							

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.3.3: Expand the scope of environmental education activities in selected areas														
	1.3.3.1: Increase provision of seedlings for greening campaign	Seedlings, nurseries, man hours	WO		▓				▓				▓		
	1.3.3.2: Develop pilot plots for indigenous species demonstration forests	Nurseries, man hours	WO		▓				▓						
	1.3.3.3: Develop pilot scheme for indigenous flower production for domestic use	Nurseries, funds	WO							▓					
	1.3.3.4: Develop educational materials on the problems associated with exotic and invasive species and use in education activities	Educational materials	PE, WO												
	1.3.4: Organise Park visits for children and traditional leaders	Transport, allowances	WO		▓			▓	▓			▓	▓		
	1.3.5: Incorporate the promotion of family planning and HIV prevention into the education programme	Transport, allowances	ADM		▓			▓				▓			
Objective 2: Threats to SENAPA resource values reduced through improved community natural resource management in buffer areas															
2.1 SENAPA collaboration in CBNRM initiatives with government, NGO and private stakeholders strengthened	**2.1.1: Work with stakeholders to identify promising CBNRM initiatives**														
	2.1.1.1: Collaborate with district authorities to identify target communities for CBNRM initiatives, and key NRM issues to be addressed	Transport, allowances	WO		▓				▓						
	2.1.1.2: Liaise with target communities to identify natural resource management issues and trends, and realistic ways that SENAPA can assist	Transport, allowances	WO		▓								▓		
	2.1.1.3: Incorporate park resource substitution approaches in CBNRM and income-generating activities supported by SENAPA (see Action 1.2.2)	Transport, allowances	WO						▓						

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Year 1				Year 2				Year 3			
				1	2	3	4	1	2	3	4	1	2	3	4
	2.1.2: Support and participate in planning and management capacity building for CBNRM initiatives														
	2.1.2.1: Support villages to carry out village surveys and obtain title deeds	Provide limited funds for the process	WO					▓	▓						
	2.1.2.2: Identify and provide support to village environmental committees in surrounding communities	Transport, man hours	WO	▓	▓	▓	▓	▓	▓						
	2.1.2.3: Support communities to establish village land-use management plans	Transport, man hours	WO	▓	▓	▓	▓	▓	▓						
	2.1.3: Train village game scouts in collaboration with other stakeholders (see also Park Operations Programme Action 1.1.5)														
	2.1.3.1: Hold meetings with traditional leaders to strengthen authority of VGS	Transport, man hours, stationary	WO, WP	▓	▓	▓	▓								
	2.1.3.2: Facilitate Resource Protection Department assistance in the development of VGS training programmes	Allowances, stationary, transport	WP					▓	▓	▓	▓				
	2.1.3.3: Assist with provision of equipment for VGS	Equipment	WP												
	2.1.4: Collaborate with SENAPA Veterinary Department in implementing veterinary outreach activities in local communities	Transport	WO			▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
	2.1.5: Work with relevant stakeholders in furthering the establishment and development of neighbouring WMAs	Transport, man hours	WO	▓		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓

Table G.5: Park Operations Action Plan

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
Objective 1: Natural resource values and human life and property are effectively and efficiently protected															
1.1 Resource protection operations strengthened in collaboration with surrounding communities and other stakeholders	**1.1.1: Provide modern equipment for anti-poaching activities**	Transport, equipment	WP		X				X				X		
	1.1.2: Carry out an assessment of new anti-poaching techniques and implement pilots (e.g. night time operations, application of GIS technology)	Transport, allowances,	WP	X				X				X			
	1.1.3: Establish cooperation with traditional leaders in raising local community awareness	Transport, allowances	WP, WO			X				X				X	
	1.1.4: Liaise with Community Outreach Department in building ranger - local community cooperation and reward schemes regarding anti-poaching activities (see also Community Outreach Programme Action 2.1.3)	Transport, allowances	WP, WO	X	X			X	X			X	X		
	1.1.5: Provide support to village governments in training VGS for protection of community conserved areas (see also Community Outreach Programme Action 2.1.3)	Transport, allowances	WP, WO		X				X				X		
	1.1.6: Solve boundary disputes														
	1.1.6.1: Liaise with districts and other departments in clearing the boundary	Transport, allowances, maps, GPS	WP, WO		X				X				X		
	1.1.6.2: Liaise with Community Outreach Department in conflict resolution process	Transport, allowances, maps, GPS	WP, WO		X				X				X		

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.1.6.3: Repair or create boundary beacons on roads along/ crossing boundaries	Transport, allowances, maps, GPS, construction materials	WP, BI			X				X				X	
	1.1.6.4: Produce and disseminate detailed digitised SENAPA map to neighbouring District authorities, tour operators and researchers	Stationary, transport, allowances	WP, PE				X								
	1.1.6.5: Enhance patrols along the park boundaries	Transport, allowances, GPS	WP	X	X	X	X	X	X	X	X	X	X	X	X
	1.1.7: Collaborate with other law enforcement agencies			X	X	X	X	X	X	X	X	X	X	X	X
	1.1.7.1: Strengthen relations through visits and meetings	Transport, fuel, allowances	WP, WO	X	X	X	X	X	X	X	X	X	X	X	X
	1.1.7.2: Carry out joint patrols	Transport, fuel, allowances	WP	X	X	X	X	X	X	X	X	X	X	X	X
	1.1.7.3: Follow up all court cases and keep proper records of all cases	Transport, fuel, allowances	WP	X	X	X	X	X	X	X	X	X	X	X	X
1.2 Safety of park visitors, personnel and property enhanced	**1.2.1: Strengthen surveillance patrols in prone areas**	Transport, fuel, allowances	WP	X	X	X	X	X	X	X	X	X	X	X	X
	1.2.2: Improve communication/ radio network	Radio call equipment, transport, allowances, consultant fees, accessories	WP		X				X				X		

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
	1.2.3: Install radio secrecy and minimise frequency interference	Tone frequency repeater	WP		X				X				X		
	1.2.4: Collaborate with other law enforcement agencies and local communities (see also Community Outreach Programme Action 2.1.3)														
	1.2.4.1: Establish rapid response mechanisms for collaborating with law enforcement agencies to deal with security incidences	Transport, allowances	WP, WO								X				
	1.2.4.2: Carry out consultations with local communities concerning long and short-term security measures	Allowances, transport, stationary	WP, WO	X					X				X		
Objective 2: Efficiency of SENAPA park operations strengthened															
2.1 Staff welfare improved	**2.1.1: Motivate and build capacity of staff**														
	2.1.1.1: Assess training needs, motivation packages and working equipment	Stationary, fuel, allowances	ADM, TANAPA HQ	X											
	2.1.1.2: Implement the training scheme	Fees, transport, allowances	ADM, TANAPA HQ			X	X	X	X	X	X	X	X	X	X
	2.1.1.3: Provide relevant working equipment	Equipment, stationary, office machines, communication facilities, vehi-cles, etc.	ADM, TANAPA HQ			X	X	X	X	X	X	X	X	X	X
	2.1.2: Improve medical services for SENAPA staff														

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
	2.1.2.1: Provide relevant working equipment and supplies	Medical equipment, staff, teaching gears, stationary, allowances	ADM, TANAPA HQ		X	X	X	X	X	X	X	X	X	X	X
	2.1.2.2: Carry out campaigns on chronic diseases	Teaching gear, staff, transport, allowances	ADM, TANAPA HQ		X	X	X	X	X	X	X	X	X	X	X
	2.1.3: Improve education opportunities for SENAPA staff														
	2.1.3.1: Identify and establish a boarding primary school within neighbouring community for children of SENAPA field staff (e.g. at Fort Ikoma)	School infrastructure, staff	ADM, TANAPA HQ					X	X	X	X				
	2.1.3.2: Investigate and if appropriate introduce an adult education programme for staff through distance learning/ the Internet	Stationary, books, trainers, computers	ADM		X	X		X	X	X	X				
2.2 Performance and professionalism of SENAPA staff improved	**2.2.1: Disseminate TANAPA code of conduct for Rangers and ensure compliance**	Staff, stationary	TANAPA HQ					X	X	X	X				
	2.2.2: Design and disseminate staff regulations														
	2.2.2.1: Agree staff regulations including leave allowance and medical requirements	Staff, stationary	TANAPA HQ					X	X	X	X				
2.3 SENAPA staff establishment strengthened to meet GMP implementation needs	**2.3.1: SENAPA Community Outreach Department strengthened**														
	2.3.1.1 Education CCA recruited to support expanded education and awareness activities	Staff	ADM, TANAPA HQ					X	X	X	X	X	X	X	X

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
2.4 Administrative integration between Fort Ikoma and Seronera improved	**2.4.1: Carry out a review to determine strategies for enhancing efficiency of administrative functions between Fort Ikoma and Seronera, with special attention to staff working conditions and travel**	Sports facilities, welfare centre, staff loans, retirement benefit	ADM, TANAPA HQ	▓	▓	▓	▓								
	2.4.2: Identify and implement ways of improving communications between Fort Ikoma and Seronera	Communication facilities, vehicles	ADM					▓	▓	▓	▓	▓	▓	▓	▓
	2.4.3: Complete the construction of staff houses and office buildings at Fort Ikom	Building of staff houses & offices	ADM, TANAPA HQ	▓	▓	▓	▓								▓
2.5 SENAPA revenue generation improved	**2.5.1: Minimise loss of revenue by improving controls (see also Tourism Management Programme Action 4.1.1)**														
	2.5.1.1: Increase number of skilled staff at all collection points	Staff	ADM, TANAPA HQ	▓	▓	▓	▓								
	2.5.1.2: Improve revenue storage facilities and safety of staff	Equipment, stationary, staff	ADM, TANAPA HQ	▓	▓	▓	▓								▓
	2.5.1.3: Review insurance policy for revenue and staff	Stationary, staff, allowances	TANAPA HQ					▓	▓	▓	▓	▓	▓	▓	▓
	2.5.2: Computerise financial accounts, with written records for back-up														
	2.5.2.1: Introduce electronic system in all collection points and link with CPW, Park Accountant, Tourism Warden and Head Office		TANAPA HQ, AI					▓	▓	▓	▓				
	2.5.3: Investigate new ways of collecting and monitoring revenue														

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
	2.5.3.1: Understand the pros and cons of alternative payment options of gate fees (e.g. cheques, bankers cheques, smart card systems) and effective methods for checking payment	Communication facilities	TANAPA HQ, AI												
	2.5.3.2: Form closer cooperation with tour operators to support policing efforts	Communication facilities	TANAPA HQ, CPW												
	2.5.3.3: Check gate revenues with daily lodge statistics and receipts at Public and Special Campsites	Staff, allowances	WT, AI, WP												
	2.5.4: Promote and support a review by TANAPA HQ for increasing the fines and penalties for breaking park rules	Communication facilities	TANAPA HQ, CPW												
Objective 3: SENAPA infrastructure and service standards improved															
3.1 SENAPA road network improved	**3.1.1: Regularly monitor road wear and tear and carry out necessary maintenance and construction, especially transit roads**	Machines, allowances, fuel, machine accessories, hand working tools, building materials	RI												
	3.1.2: Remove unmade tracks that are in the High Use Zone, e.g. around the Gol Kopjes	Transport, fuel, allowances	RI, WT												
	3.1.3: Design and implement a new road construction programme for establishing and maintaining game viewing and anti-poaching tracks and loops in line with the GMP Zoning Scheme and in collaboration with the Tourism and Ecology Departments	Transport, fuel, allowances, stationary	RI, WT, WP												

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
	3.1.4: Develop Handajega airstrip as the principal airstrip servicing the western SENAPA tourism lodges and camps														
	3.1.4.1: Complete upgrading of Handajega airstrip	Fuel, machine accessories, allowances	RI, WT		■	■									
	3.1.4.2: Improve access roads to Handajega to allow year-round access	Fuel, machine accessories, allowances, building materials	RI	■											
3.2 Reliable and safe water supplies established	**3.2.1: Carry out feasibility study and scope of work for reconstructing the Bologonja pipeline**	Transport, allowances, stationary	CCE, BI	■	■										
	3.2.2: Reconstruct Bologonja pipeline in line with recommendations and specifications of feasibility study and in collaboration with major pipeline users	Machines, allowances, fuel, Plumbing & building materials	CCE, BI						■	■	■	■	■	■	■
	3.2.3: Install water harvesting mechanisms in all buildings								■	■	■	■	■		
	3.2.3.1: Install high capacity water storage facilities at 8 ranger posts (underground tanks)	Fuel, transport, allowances, building materials	BI						■	■		■	■	■	■
	3.2.4: Carry out hydro-geological survey of the entire Park to identify potential new source of fresh water supply	Fuel, transport, allowances, plumrails	CCE, BI, Regional Water Dept., stakeholders						■	■	■	■	■	■	■

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
	3.2.5: Carry out a feasibility study for other potential water supplies to service park and tourism facilities	Transport, plumbing materials, allowances, stationary, fuel	CCE, BI, Regional Water Dept., stakeholders					▓	▓	▓	▓	▓	▓	▓	▓
3.3 Environmental impacts of park developments minimised	**3.3.1: Manage all infrastructure work-related machines and wastes**														
	3.3.1.1: Dispose all wastes (oils, greases, and fuels) as appropriate	Waste disposal equipments i.e. plastic containers, degreasers, orange pum soap etc.	ME	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
	3.3.1.2: Add and replace worn out machines and tools as necessary	Cement, aggregates, stones and labour costs for garage landscaping	ME	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
	3.3.2: Carry out site specific EIA/ PEA for all infrastructures	Fuel, transport, stationary	PE, RI, BI, WT, WP	▓	▓			▓	▓			▓			
	3.3.3: Minimise the impact of mobile phone infrastructure and use on the wilderness character of SENAPA														
	3.3.3.1: Work with telecommunications operators to reduce environmental impact of new telecommunications infrastructure by locating at existing telecommunications sites	Transport, man hours	CPW, ADM, PE	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
	3.3.3.2: Enforce regulation that the use of mobile phones is restricted to within accommodation facilities and disseminate this through the Code of Conduct and signs at park gates (see also Tourism Management Programme Action 1.1.3)	Transport, man hours	WP, WT, ADM	░	░	░	░	░	░	░	░	░	░	░	░
	3.3.4: Monitor and regulate park transit traffic														
	3.3.4.1: Implement a pilot scheme for posting park staff on buses and other transit vehicles to monitor driving and raise awareness of the Code of Conduct	Transport, fuel, allowances	WT, WP	░	░	░	░	░	░	░	░	░	░	░	░
	3.3.4.2: Regulate the time that transit vehicles take through permissible routes within SENAPA (e.g. not through Western Corridor)	Transport, communication facilities, equipment (speed gun)	WT, WP, ADM	░	░	░	░	░	░	░	░	░	░	░	░
	3.3.4.3: Introduce a weighbridge to monitor gross weight of transit vehicles	Equipment (weigh bridge)	RI, WT, WP, TANAPA HQ						░	░	░	░	░	░	░
Objective 4: Local, national and international collaboration in the long-term conservation and management of the SENAPA and the wider ecosystem strengthened															
4.1 Stakeholder collaboration and partnerships established and strengthened	**4.1.1: Build stakeholder collaboration both within and outside the country**														
	4.1.1.1: Identify key stakeholders both within and outside the country (all key stakeholders within and five from outside Tanzania)	Communication facilities	TANAPA HQ, CPW	░	░	░									
	4.1.1.2: Establish and strengthen collaboration/partnership programmes with key stakeholders	Communication facilities	TANAPA HQ, CPW		░	░	░	░	░	░	░	░	░	░	░
	4.1.2: Develop exchange programmes with other protected areas														

Management Targets	Management Actions/ Activities	Input requirements	Responsibility	Timeframe											
				Y1				Y2				Y3			
				1	2	3	4	1	2	3	4	1	2	3	4
	4.1.2.1: Identify and establish exchange programmes with other PA's	Communication facilities	TANAPA HQ, CPW												
	4.1.2.2: Develop and strengthen transboundary cooperation with Kenya	Communication facilities	TANAPA HQ, CPW												

PLAN
MONITORING

The GMP monitoring framework described in this section is designed to provide guidance for the regular assessment of the impacts, positive and negative, resulting from GMP implementation, a set of indicators for easily measuring these impacts, and the most likely sources of this information. Regular monitoring of GMP implementation will enable future adaptive management of SENAPA, in particular through the subsequent adjustment of the rolling three-year Action Plans, in order to maximise the positive impacts and to mitigate the negative impacts of GMP implementation. As such, the implementation of this monitoring framework is a key factor in the ultimate success of the plan.

The following tables set out the monitoring frameworks for the GMP's four management programmes. The potential positive impacts and related indicators resulting from the implementation of each programme's management targets are given in **Green**, and, where appropriate, the potential negative impacts and related indicators are shown in **Red**.

Table H.1: Ecosystem Management Programme Monitoring Plan

Management Target	Potential impacts (**Positive** and **Negative**)	Indicator	Source of Information
Objective 1: The conservation and ecological status of SENAPA Conservation Targets enhanced and threats reduced			
1.1: Human impacts threatening the Migration minimised	Reduced number of poaching incidents	Number of snare types & success rates	Ecological Monitoring Plan (Conservation Target 1)
	Migration routes in the Greater Serengeti Ecosystem remain open	Human, livestock population pressure and extent of cultivation near migratory routes	Ecological Monitoring Plan (Conservation Target 1)
		Number of collaborative initiatives arising from transboundary meetings	Ecology Department reports and minutes of stakeholder meetings
1.2: Human impacts on the Mara River monitored and minimised	Maintenance of water flow rates and quality	Changes in key ecological attributes of the Mara River	Ecological Monitoring Plan (Conservation Target 2)
	Policy-makers and catchment stakeholders cooperating in sustainably managing the Mara River	Establishment of collaborations and partnerships	Park and TANAPA HQ records
1.3: Fire extent, frequency and intensity within key habitats managed	Status of the four habitat conservation targets are maintained or enhanced	Extent of tree cover and density of indicator species	Ecological Monitoring Plan (Conservation Targets 3-6)
1.4: Restoration of viable populations of Black rhino	Existing populations of Black rhino within SENAPA are stable and increasing	Total counts of Black rhino	Ecological Monitoring Plan (Conservation Target 7)

Management Target	Potential impacts (Positive and Negative)	Indicator	Source of Information
	Re-introduction of new sub populations of Black rhino in secure new habitats	Extent of rhino secure areas Number of re-introduced Black rhino	Ecological Monitoring Plan (Conservation Target 7)
1.5: Restoration of viable populations of Wild dogs	Minimisation of threats that potentially are preventing the natural re-introduction of Wild dogs to SENAPA	Disease incidences in domestic dogs, disease prevalence in Wild dogs and incidences of human-Wild dog conflict	Ecological Monitoring Plan (Conservation Target 8)
	The feasibility for the re-introduction of Wild dogs to SENAPA fully understood and explored	Development of proposal for a SENAPA re-introduction programme	Ecology Department records

Table H.2: Tourism Management Programme Monitoring Plan

Management Target	Potential impacts (Positive and Negative)	Indicator	Source of Information
Objective 1: Visitor access and use developed and enhanced in environmentally appropriate and sustainable ways			
1.1: Disturbance of key habitats, wildlife populations and other exceptional resources minimised	Reduced overcrowding in wildlife viewing hotspots	Number of vehicles at key sites	Monitoring system for visitor use of park zones (c.f. Action 4.1.3)
	Greater compliance with Serengeti Code of Conduct	Incidences contravening park rules and regulations	Anonymous incident reports (c.f. Action 4.1.2)
	Improved visitor experience	Visitor satisfaction with wildlife viewing	Visitor use and satisfaction surveys (c.f. Action 4.1.3)
1.2: Tourism access and use diversified in appropriate ways, in order to expand SENAPA tourism attractions and minimise overuse of existing attractions	Increased tourism use in the Low Use and Wilderness Zones	Concession holder bed nights and campsite usage	Concession holder records and bed night fees (Park accounts)
	Increased range of tourism opportunities for visitors	Number of different activities undertaken by visitors	Visitor use and satisfaction surveys (c.f. Action 4.1.3)
	Decline of visitor safety as a result of diversification of tourism activities into more remote areas	Safety incidences	Protection Department records
	Pollution and waste at tourism sinks degrading Park's flora, wildlife habitat and cultural values	Evidence of pollution or habitat degradation at tourism sinks	Targeted inspections by SENAPA staff
	Construction or grading of access roads into the Wilderness Zone leading to the contamination of soils and river systems from oil and diesel spills	Evidence of pollution along access roads	Targeted inspections by SENAPA staff
	Off-road driving scheme irreversibly damaging vegetation recovery rates and ground fauna	Evidence of habitat degradation in designated off-road driving zones	Monitoring of off-road driving by SENAPA staff

Management Target	Potential impacts (Positive and Negative)	Indicator	Source of Information
Objective 2: SENAPA visitor facilities improved in order to provide an optimal tourism experience with minimal environmental impact			
2.1: Visitor facilities improved and expanded in close consultation and collaboration with the tourism industry, especially those catering for local tourists and alternative tourism activities	Increased number of visitors to SENAPA, especially Tanzania citizens	Number of visitors (disaggregated between local and international)	Tourism and Accounts Department records
	Enhanced/ maintained visual appeal of SENAPA tourism facilities	Visitor satisfaction of park facilities and accommodation	Visitor use and satisfaction surveys (c.f. Action 4.1.3)
	SENAPA's wilderness characteristics and environmental quality are compromised around visitor facilities	Evidence of pollution, litter or habitat degradation at and around facilities	Targeted inspections by SENAPA staff and detailed Action/ Development Site Specific EIAs
	New water infrastructure will lead to unsustainable water use	Evidence of reduced water flow rates	SENAPA Ecological Monitoring results
2.2: Systems for monitoring and regulating the environmental impacts of tourism facilities designed and established	Tourism facilities are having a minimal impact on SENAPA's environment	Evidence of pollution or litter around the facilities and effective use of water and fuelwood	Targeted inspections by SENAPA staff and self-evaluations by concessionaires
Objective 3: SENAPA interpretive centres and materials are high quality, relevant, informative and educational			
3.1: An improved and expanded network of SENAPA visitor interpretation facilities developed	Increased visitor support for SENAPA	The number of tourists visiting interpretation facilities Visitor satisfaction with interpretive facilities	Visitor use and satisfaction surveys (c.f. Action 4.1.3)
	The facilities detract from the wilderness character of the landscape	Habitat degradation at and around the visitor interpretation facilities	Inspections by SENAPA staff
	Pollution and waste will be generated at facilities	Pollution and/ or litter at and around the visitor interpretation facilities	
3.2: Supply of visitor information materials improved	Visitors gain a better understanding of SENAPA's ERVs, ecology and conservation issues	Number of guidebooks sold and leaflets distributed	Tourism Department records
		Visitors' evaluation and feedback on information materials	Visitor use and satisfaction surveys (c.f. Action 4.1.3)

Management Target	Potential impacts (**Positive** and **Negative**)	Indicator	Source of Information
Objective 4: Tourism management improved in collaboration with tourism industry partners			
4.1: SENAPA tourism admini-stration & infor-mation systems strengthened in order to provide park managers with timely and accurate informa-tion on visitor numbers, tourism impacts, and revenue genera-tion	Maintained and in-creased Park reve-nues	Receipts from en-trance fees and con-cessionaires	Park Accounts
	Enhanced respon-siveness of SENAPA to tourism needs and trends	Annual/ monthly tour-ism statistics analysis and visitor satisfaction	SENAPA computer-ised management system reports and visitor use and satis-faction surveys (c.f. Action 4.1.3)
4.2: Mechanisms developed for strengthening communication and cooperation between tourism industry partners and SENAPA management	Increased role of tourism sector in supporting park management	New opportunities re-alised for collaboration and information shar-ing	Minutes of park management - tour-ism sector meetings

Table H.3: Community Outreach Programme Monitoring Plan

Management Target	Potential impacts (Positive and Negative)	Indicator	Source of Information
Objective 1: Neighbouring community and local government support for conservation strengthened			
1.1: Park-community cooperation, communication and conflict resolution mechanisms enhanced	Increased community awareness of SENAPA rules and regulations	Incidences of poaching within SENAPA	Protection Department records
	Reduced conflict between SENAPA and surrounding communities	Incidences of Park-community conflict	Outreach Department records Knowledge, attitudes and practices surveys (c.f. Action 1.1.2)
	Park outreach activities are better targeted to community priority needs and aspirations	Community contributions to park outreach activities (i.e. labour or resources)	Outreach Department records
1.2: Community benefits from SENAPA enhanced and costs reduced	Increased value and importance of SENAPA to Park-adjacent communities	SENAPA SCIP contributions	Park accounts
		Income derived from economic activities linking communities to SENAPA	Community based organisations/ Outreach Department records
		Employment of local people by Park stakeholders	Park accounts and Outreach Department records
		Ranking of community value placed on SENAPA against other community resources	Knowledge, attitudes and practices surveys (c.f. Action 1.1.2)
	Reduced costs of wildlife to Park-adjacent communities	Incidents of human-wildlife conflicts in communities adjacent to the Park	Outreach Department records (c.f. Action 1.2.3)
	Increased immigration into areas surrounding SENAPA	Trends in population growth and immigration in Park adjacent areas	Direct observation and District records
	Benefits from IGAs are unfairly captured by wealthy/ powerful community members	Number of recipients and beneficiaries of schemes	Community based organisations/ Outreach Department records
	SENAPA's high quality tourism product degraded by inappropriate initiatives or activities	Visitor satisfaction and feedback	Visitor use and satisfaction surveys (c.f. Tourism Management Programme Action 4.1.3)

Management Target	Potential impacts (**Positive** and **Negative**)	Indicator	Source of Information
1.3: Conservation education programme improved and expanded to be more accessible and relevant to local needs	Improved understanding of SENAPA conservation issues in Park-adjacent communities	Community members can identify SENAPA ERVs and key conservation issues	Knowledge, attitudes and practices surveys (c.f. Action 1.1.2)
Objective 2: Threats to SENAPA resource values reduced through improved community natural resource management in buffer areas			
2.1: SENAPA collaboration in CBNRM initiatives with government, NGO and private stakeholders strengthened	Optimised NRM in Park-adjacent areas for both the conservation of SENAPA resources and community well being	Number of village land-use management plans	Outreach and Protection Departments records (c.f. Park Operations Programme Action 1.1.5)
		Functioning and inclusive natural resource management committees	
		Number of trained village game scouts	

Table H.4: Park Operations Programme Monitoring Plan

Management Target	Potential impacts (Positive and Negative)	Indicator	Source of Information
Objective 1: Natural resource values and human life and property are effectively and efficiently protected			
1.1: Resource protection operations strengthened in collaboration with surrounding communities and other stakeholders	Reduced likelihood of illegal activities taking place in SENAPA	Number of arrests made per law enforcement effort	Protection Department records
		Percentage of arrests leading to prosecution	
	Law enforcement efforts of other SENAPA stakeholders enhanced	Establishment of information sharing and collaboration mechanisms with local communities and other law enforcement agencies	Protection and Outreach Departments records
1.2: Safety of park visitors, personnel and property enhanced	Reduced likelihood of security breaches taking place in SENAPA	Number of incidences of insecurity in SENAPA	Protection Department records
	Improved security in Park-adjacent communities	Number of incidences of cattle rustling around SENAPA	Protection and Outreach Departments records
Objective 2: Efficiency of SENAPA park operations strengthened			
2.1: Staff welfare improved	Improved morale of SENAPA staff	Requests for transfer	Personnel records
2.2: Performance and professionalism of SENAPA staff improved	Improved efficiency of SENAPA staff in undertaking their assigned duties	Performance against departmental annual operating plan activity targets	Park Management records
2.3: SENAPA staff establishment strengthened to meet GMP implementation needs	GMP Action Plans successfully implemented	Performance against departmental annual operating plan activity targets and 3-Year Action Plan	Park Management records
2.4: Administrative integration between Fort Ikoma and Seronera improved	Improved efficiency of SENAPA staff in undertaking their assigned duties	Incidences of commuting between Fort Ikoma and Seronera	Garage trip and fuel consumption records
2.5: SENAPA revenue generation improved	Increased revenues (above the rate of inflation)	Gate receipts relative to visitor bed-nights	Gate receipts and visitor bed night records

Management Target	Potential impacts (Positive and Negative)	Indicator	Source of Information
Objective 3: SENAPA infrastructure and service standards improved			
3.1: SENAPA road network improved	Improved visitor access to game viewing and scenic areas	Visitor, concessionaire and tour operator satisfaction	Visitor use and satisfaction surveys and minutes from the park-tourism sector meetings (c.f. Tourism Management Programme Action 4.1.3 and 4.2.1 respectively)
	Improved access for law enforcement and administrative purposes	Vehicle maintenance information	Garage records
	Reduced environmental degradation of sensitive areas	Number of detour roads around damaged roads and tracks	Targeted inspections by SENAPA staff
	Noise pollution from road construction work disturbing animals, birds or insects	Evidence of disturbance during maintenance/ construction activities	Targeted inspections by SENAPA staff
	Contamination of soils and river systems from oil and diesel spills	Evidence of pollution or habitat degradation along roads	Targeted inspections by SENAPA staff
	Rehabilitation of the decommissioned tracks does not occur	Evidence of rehabilitation	Targeted inspections by SENAPA staff
3.2: Reliable and safe water supplies established	Adequate water supplied year-round in SENAPA	Amount and reliability of water supply to all Park facilities	Works Department records and minutes from the park-tourism sector meetings (c.f. Tourism Management Programme Action 4.2.1)
	The water extraction from the reconstructed pipeline is unsustainable	Evidence of reduced water flow rates	SENAPA Ecological Monitoring results
3.3: Environmental impacts of park developments minimised	Proper waste and pollution management systems installed throughout the Park	Evidence of functioning waste and pollution management systems	Site specific EIA/ PEAs (c.f. Action 3.3.2)
	Improved adherence to SENAPA rules and regulations by commercial vehicles	Commercial traffic speed and driving standards	Commercial traffic monitoring records Incident reports

Management Target	Potential impacts (**Positive** and **Negative**)	Indicator	Source of Information
Objective 4: Local, national and international collaboration in the long-term conservation and management of the SENAPA and the wider ecosystem strengthened			
4.1: Stakeholder collaboration and partnerships established and strengthened	Improved support for SENAPA conservation and management needs	Number of meetings or other stakeholder collaboration events held	Park Management records
	Enhanced transboundary collaboration	Number of meetings or other collaboration events with Masai Mara National Reserve managers	
	Improved understanding of international protected area management best practice	Number of exchange visits organised and successfully implemented	

ANNEXES

Annex 1: Bibliography

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Annex 2: Serengeti GMP planning timeframe

Timeline	Activities	Outputs
Jul 2003	CORE PLANNING TEAM MEETING →	PLANNING SCOPE OF WORK
Sep - Dec 2003	RBI COLLECTION& STAKEHOLDER CONSULTATIONS →	RBI REPORT
Jan 2004	**GMP STAKEHOLDERS PLANNING WORKSHOP** →	PLAN FOUNDATION REPORT
May - Nov 2004	REVISIONS TO TANAPA STRATEGIC PLANNING PROCESS →	UPDATED PLANNING MANUAL
Sep 2004	CORE PLANNING TEAM MEETING	
Dec 2004 - Feb 2005	WORKING GROUPS / STAKEHOLDER CONSULTATIONS →	MANAGEMENT PROGRAMMES
Mar 2005	**GMP STAKEHOLDERS PRESENTATION WORKSHOP** →	DRAFT GMP
Apr 2005	**ACTION PLAN REALITY CHECK BY SENAPA DEPARTMENTS** →	FINALISED ACTION PLANS
Nov 2005	**TANAPA HQ & BOARD REVIEW** →	FINAL GMP

Annex 3: Overnight accommodation definitions[7]

1. Permanent Accommodation

For all permanent accommodation the following definitions apply:

- Only essential onsite staff housing
- Essential parking and storage space only
- Swimming pool optional
- Biodegradable trash buried and burnables burned by tour operator
- Non-burnables removed from the Park by tour operator

A *Hotel* has one level, permanent, steel reinforced cement foundations with permanent hard walls, continuous structure with multiple interior bedrooms, dining room, bar, gift shop, offices, reception, and storage under one primary roof structure with interior plumbing and power.

A *Wildlife Lodge* has one level, permanent, steel reinforced cement foundations with permanent hard walls, continuous structure with reception, gift shop, dining room, bar, and offices under one roof with interior plumbing and power. There are a series of one level, separated, permanent, steel reinforced cement bedroom structures (bandas, cottages, etc.).

A *Permanent Tented Camp* has one level, cement or wood platform, tented structure with reception, dining room and bar. There are a series of one level, cement or wood platform, separated, permanent tented bedroom structures.

2. Non-permanent tented camps

Public Campsites include all temporary tented camps, numbered and designated tent sites with perimeter definition for tent locations, fire rings, and parking area. There should be permanent toilet structures and TANAPA operate regularly scheduled waste pickup collection and toilet maintenance.

Special Campsites include all temporary tented camps, with no cement platforms or permanent structures of any type and nor permanent toilet structures of any type. All waste is packed out by tour operators and camouflage camping techniques are applied.

Premium Campsites are a new category of accommodation similar to Special Campsites; except that camps will be established on an exclusive seasonal basis in ecologically sensitive and unique areas of the Park

Wilderness Campsites are non-designated (may be designated under special circumstances) tented campsites and foot trails. Access is by foot only, with no permanent structures or roads of any type permitted. Tour operator or individual user is responsible for packing out all waste and camouflage camping techniques must be applied.

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[7] All TANAPA Lease or Non-Lease accommodation categories will prohibit the concessionaire or organisation from establishing any type of procedure that will result in discrimination or "exclusive use" of the facilities. Anyone will be allowed to book or reserve accommodations for the above types of accommodation.

Annex 4: Serengeti National Park GMP Planning Team

Name	Position/ Organisation	Workshop		Working Groups			
		#1	#2	Eco-system	Tour-ism	Com-munity	Park Ops
Ami H. Seki	Warden, Resource Protection Dept., SENAPA	4					4
Amoyo T. Amoyo	NCAA, Law Enforcement Officer	4					
Andrew Williams	Programme Officer, CDC	4					
Anne Hilborn	Serengeti Cheetah Project, SENAPA		4				
Brian Harris	Grumeti Reserves		4				
Ceci Nkawabi	Outreach Department, SENAPA					4	
Craig Doria	Tanzania Game Tracker Safaris		4				
David Moyer	World Conservation Society, Tanzania			4			
Emmanuel J. Gereta	Chief Ecologist, TANAPA	4					
Ephraim Mwangomo	Park Ecologist, SENAPA	4	4	4	4	4	4
Eunice Msangi	Tourism Warden, SENAPA	4					
Ezekiel A. Dembe	Planning Manager, TANAPA	4	4	4	4	4	4
Francesco Pierre-Nina	MD, Tanzania Outfitters And Safaris/ TATO Trustee	4					
Fredrick Mwombeki	Commander Zonal Anti-Poaching Unit, SENAPA	4					
G.L. Ijumba	Meatu District Council		4				
Genes F. Shayo	Park Warden, SENAPA	4	4				
George Mpanda	Park Accountant, SENAPA	4	4				
George S. Kagomba	District Executive Director Tarime		4				
Gerard Ambrose	Robin Hurt Safaris		4				
Grace Kyoma	Planning Department, TANAPA					4	
Grant Hopcraft	Serengeti GIS Centre Coordinator, FZS	4		4			
Haika John Bayona	Outreach Programme Warden, TANAPA-HQ	4					
Heriel Masaki	Outreach Department, SENAPA		4			4	
I.R. Nkuwi	Magu District Council		4				
Inyasi A. Lejora	Manager, Ecological Monitoring Dept., TANAPA-HQ	4		4			
Ishael J. Varoya	Roads Foreman, SENAPA	4					4
Ismael N. Nnko	Accountant SENAPA	4					
James Chiragi	Planning Department, TANAPA			4			
Joe Ole Kuwai	Projects Director, FZS	4	4				
John Nyamhanza	SENAPA		4				
Johnson Manase	Tourism Manager, TANAPA	4	4		4		
Joseph J. Chuwa	Park Warden, Ag Building, Inspector	4					
Julius Musei	Park Warden SENAPA	4	4				
Justin N. Hando	Chief Park Warden, SENAPA	4	4	4	4		4
Justus M. Molai	Council Director, Bunda District Council	4					
Karen Laurenson	Africa Programme Officer, FZS	4	4		4	4	
Laurent Katakweba	Ag Pm SRCP	4					

Name	Position/ Organisation	Workshop		Working Groups			
		#1	#2	Eco-system	Tour-ism	Com-munity	Park Ops
Les Carlisle	Conservation Manager Conscorp/ TATO	4			4		
Marion East	Institute for Zoo & Wildlife Research & Messerli Foundation		4				
Markus Borner	Head Africa Department, FZS	4	4				
Mathias Ngwibombi	Ag Ded, Tarime	4					
Meggan Craft	Serengeti Lion Project, SENAPA		4				
Mike Sanders	Project Manager, Sopa Lodges/ TATO	4			4		
Mokiri Warento	Serengeti District Council		4				
N.G. Ruvugo	Ag Ded, Ngorongoro Dc	4					
Noelia Myonga	Planning Department, TANAPA HQ			4			
Peter Gordon	Sopa Lodge/ Migration Camp		4				
Peter Ibrahim	Outreach Warden, SENAPA						4
Peter Makutian	Ngorongoro Conservation Area Authority		4				
Peter Manendo	Park Warden, Western SENAPA	4	4				
Peter Ngassa	Executive Director, Meatu District	4					
Phillips P.B. Mtiba	Ag Ded, Bariadi	4					
Reginald D. Maselle	Mechanical Engineer, SENAPA	4	4				4
Reginald P. Sukums	SENAPA		4				
Remus Mkongwe	Park Warden SENAPA	4					
Rian Labuschagne	MD VIP Safari Club	4					
Richard Beatty	Director, Africa Environments Ltd		4		4		
Richard Hoare	TAWIRI, SENAPA						
Richard Knocker	Product Development, Nomad/ TATO	4	4				
Rob Craig	Facilitator, Programme Manager CDC		4	4	4		
Rob Malpas	Facilitator, CEO CDC	4	4	4	4		
Rose Ngilisho	Tented Division Manager (Thomson Safaris), TATO	4	4				
Rose Reubem Swai	Administration Manager, SENAPA	4					4
Samuel K. Bakari	Ag. Director SWRC	4					
Simon Mduma	TAWIRI		4	4			
Stephen K. Msumi	Park Warden Moru, SENAPA	4					
Sue Stolton	Rep. UNESCO, Enhancing Our Heritage Project	4					
Sultana Bashir	Project Manager Cheetah Project	4					
Teresia Ole Mako	CCW, SENAPA	4					
Theotimos N. Rwegasira	SGO-WD-HQ	4					
Tim Corfield	Foxtrot Charlie Ltd.		4				
Titus K. Mlengeya	SENAPA		4				
Tony Pascoe	Serengeti Balloon Safaris		4				
Tony Sinclair	Centre for Biodiversity Research, Canada		4	4			
Undule Mwampeta	Tourism Warden, SENAPA		4		4		4
Upendo Massawe	Park Warden, SENAPA	4					
V.H. Lyaruu	Vet Serengeti	4					

| Name | Position/ Organisation | Workshop | | Working Groups | | | |
		#1	#2	Eco-system	Tour-ism	Com-munity	Park Ops
Wildfred Shirima	Serengeti Serena Safari Lodge		4				
William J. Ngowo	Project Manager, Maswa Game Reserve	4	4				
Wilton Jotham	SRCP	4	4				
Zabron Bugwesa	Vet Officer SENAPA	4	4				